Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIV. NEW YORK, MARCH 5, 1859. NO. 26.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 37 Park-row (Park Building), New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns of the United States.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in this city Brooklyn and Jersey City.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

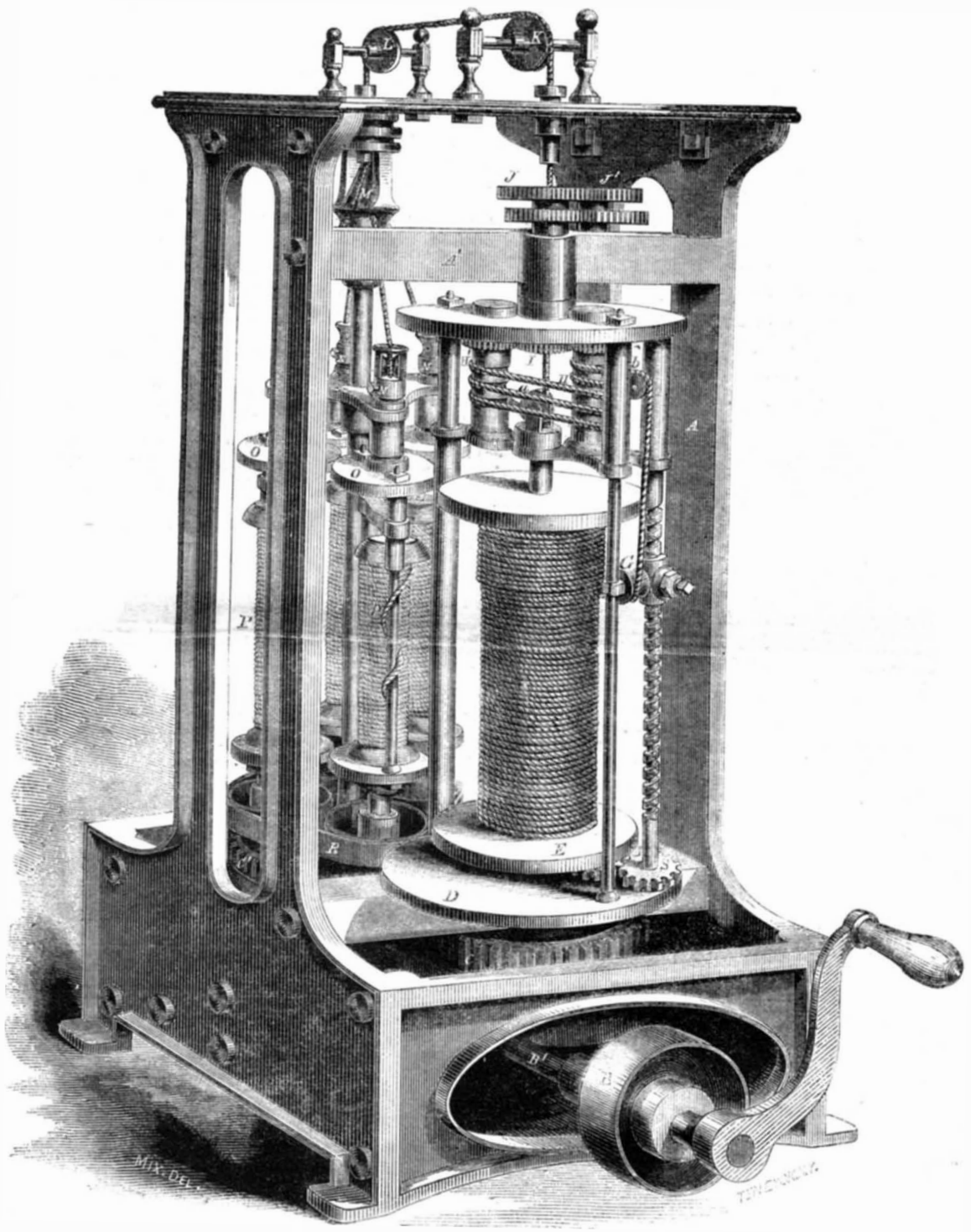
TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.

Curiosities of Human Food.

Mankind has been wonderfully ingenious from its infancy, in the concoction of edible varieties. Apart from baked human thighs in Fejee, and boiled fingers in Sumatra, there are sundry culinary fashions still extant which must be marvelously unintelligible to a conventionalized appetite. Not that it appears strange to eat duck's tongues in China, kangaroos in Australia, or the loose covering of the great elk's nose in New Brunswick. Not even that it is startling to see an Esquimaux eating his daily rations, twenty pounds in weight of flesh and oil, or the Yakut competing in voracity with a boa constrictor. But who would relish a stew of red ants in Burmah, a half-hatched egg in China, monkey cutlets and parrot pies at Rio Janeiro, and bats in Malabar, or polecats and prairie wolves in North America? Yet there can be little doubt that these are unwarrantable prejudices. Dr. Shaw enjoyed lion; Mr. Darwin had a passion for puma; Dr. Brooke makes affidavit that melted bears' grease is the most refreshing potion. And how can we disbelieve, after the testimony of Hippocrates, as to the flavor of boiled dog? If squirrels are edible in the East, and rats in the West Indies—if a sloth be good on the Amazon, and elephants' paws in South Africa, why should we compassionate such races as have little beef or mutton? for we may be quite sure that if, as Montesquieu affirms, there are valid reasons for not eating pork, there are reasons quite as unimpeachable for eating giraffe, alpaca, mermaid's tails, bustard and anaconda.

ADAMS' ROPE-MAKING MACHINE.



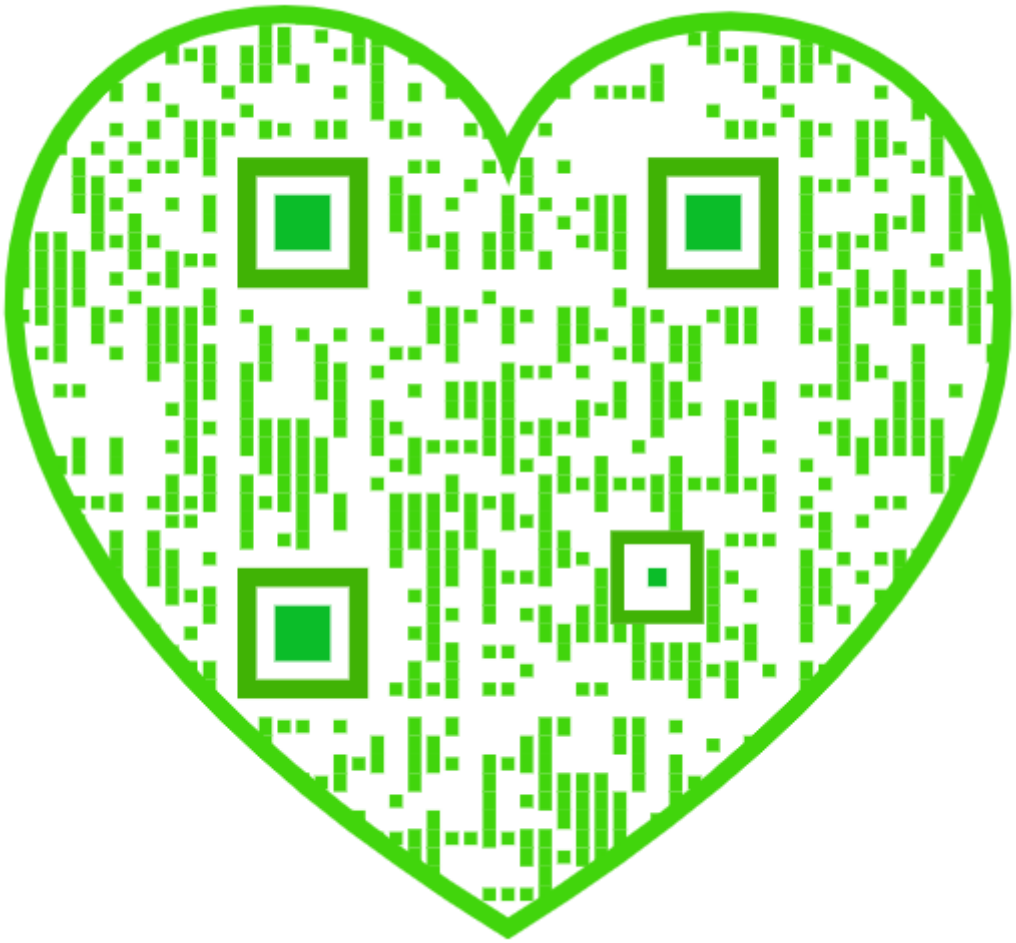
Improved Rope-Making Machine.

The manufacture of rope by machinery is a great improvement on the old system, not only in the superiority of the article produced but also in the quantity and economy of labor. The subject of our illustration is a machine for making rope, recently invented by Newton Adams, of Lansingburgh, N. Y., and patented by him August 24, 1858, and it possesses the peculiarity of giving the rope half its twist while in motion toward the receiving reel, thus saving time in the manufacture.

A is the framing, and near its back it contains bearings for an upright shaft that corresponds with the main laying spindle of an ordinary sun-and-planet machine, and has secured to it the usual bearings holding the bearings of the strand flyers, O, and bobbins, P. The strands pass from the flyers over small pulleys, N, and over the grooves in the conical cap, M, so that each strand is smoothed and twisted, before being partially twisted together as rope, when passing over the pulley, L. Motion is given to the central shaft of the flyer frame from the prime mover, by a shaft, B′, provided with bevel gearing and driven either by a crank or belt-wheel, B. The cog-wheel, C′, is the means by which motion is conveyed to the flyer frame. The flyers, themselves, are rotated inside the rotating frame by a very simple and ingenious device, each flyer being provided with a small belt wheel, and around them all passes the belt, R, which is secured so as to be incapable of revolving with the frame, and yet at the same time hugs the pulleys enough to give them motion, so that when the flyer frame carries them round within it, they are also rotated and give the necessary twist to the strand. D is another revolving flyer moved by the cog-wheel, C, from B, and this finishes the twist of the rope as it comes from the other flyer frame over the pulleys, L K.

The rope passes through a tube in the top of the frame and through the center of gearing, J, J', in the cross-piece, A', and over the tension-rollers, H, H', to the reel. One of the cog-wheels, J, is connected by a tubular shaft with the cog-wheel, I, and this rotates the two tension-rollers or grooved capstans, H, H', at such a speed, according to the rate at which the machine is working, as to always keep the cord or rope sufficiently "taut." The rope coming under the small pulley, *a*, is taken on to H', thence to H, and hence over the pulley, *b*, and under the traverser, G, that is mounted on a double screw-shaft, E, and this gives it the proper lay upon the reel. This screw-shaft is moved by gearing, S, from the reel, E, which is also rotated. The twist may be varied by changing the relation of the motions of the flyer-frame and reel, which can be done by shifting the belt on cone-pulleys (not seen in our engraving), or by varying the motion of the strand-flyers, making them move faster or slower. The great advantage of this machine is the saving of time, as the rope is being twisted all the while during its motion from the strands to the receiving-reel, and it can be worked at any speed, and constructed of any size for any kind of rope. The reel, E, can of course be arranged horizontally, if desired. The inventor has assigned the patent to himself and Hamilton Arnot, of the same place, and any further information of this truly ingenious and efficient machine may be obtained by addressing the inventor as above, or H. W. Fowler, General Agent, Hoosick Falls, N. Y.

© 1859 SCIENTIFIC AMERICAN, INC.



Issued from the United States Patent Office

FOR THE WEEK ENDING FEBRUARY 22, 1859.

Reported officially for the Scientific American.]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

METHOD OF OPERATING RECIPROCATING SAWS—T. J. Alexander, of Westerville, Ohio: What is here claimed is, reciprocating the saw by means of right and left hand rocking levers or drivers, jointed to, or otherwise connected with, the saw, when said levers are separately hung or pivoted and geared together for reverse action, and so arranged as to admit of being worked by the hands of the operator, substantially in the manner specified.

PREPARATION OF ARTIFICIAL FUEL—Henry Adolphe Archerau, of Paris, France. Patented in France Aug. 11, 1856: I claim producing artificial fuel by stirring, mixing, or incorporating coal dust or small coal, peat, turf, lignite, or other combustible substances, with rosin, pitch, tar, or other resinous, bituminous, or carbonaceous matters or substances, in any suitable proportions, according to the nature of the materials employed, and by causing steam, hot air, or gases, to pass through the mass during the stirring or mixing operation, or while the carbonaccous and bituminous particles are in motion.

I also claim mixing vulcanized carbonaceous matter with melted pitch, tar, or other bituminous substances, when the latter are worked up into a frothy state as described.

APPARATUS FOR DESTRUCTIVE DISTILLATION—Luther Atwood, of Brooklyn, N. Y.: I claim the arrangement and combination of the combustion tower, distilling tower, and steam blast, or their substantial equivalents, in combination, when arranged, combined, and operated substantially as described.

MACHINE FOR JOINTING STAVES—Henry Benter, of Wheeling, Va: I claim, first, The carriage, C, provided with rollers, i, and used in connection with the adjustable guides, a b, and rotating cutter head, c, substantially as and for the purpose set forth.

Second, The adjustable plate. s, in connection with the stationary jaw, j, and sliding jaw, K, attached to the carriage, c, substantially as and for the purpose specified.

[By this machine staves may be both dressed and jointed in a very expeditious manner, to suit barrels and casks of various sizes.]

MEASURING FAUCET—Edmund Bigelow, of Springfield, Mass.: I claim an improved self-measuring faucet, whose supply valve is closed and discharge valve opened by a single movement, and whose discharge valve is closed and supply valve opened by a single movement produced by a spring, and which is supplied with a [illegible] which last vent pipe is shut off when the faucet is to be filled or is standing full, substantially as described.

CASTING STEREOTYPE PLATES—William Blanchard, of Washington, D. C.: I do not claim anything new in the method described of fastening the flexible mold plates.

I do not claim the casting of stereotype plates for printing, by immersion, as a novelty.

But I claim casting stereotype plates for printing by immersing a metallic mold plate with a mold or matrix formed upon and adhering to it, substantially as described.

I claim the manner of casting any number of stereotype plates, by immersion, or otherwise, in which each mold plate holds, on one of its sides, a matrix, whereon the face of the stereotype plate is cast, in one compartment, while its reverse side, in any compartment, is used as a matrix whereon to cast the back of another stereotype plate, substantially as described.

PROPELLER FOR CANALS—Benjamin Burling, of Buffalo, N. Y.: I claim propelling canal boats or other craft by means of a steam tug, B, placed within a well hole, a, at the stern, and connected therewith by the shackle, b, and stancheons, c d, or their equivalents, substantially as and for the purpose set forth.

[The object of this invention is to apply steam power to the vessel in such a manner that the necessary machinery for effecting the purpose will not be inseparably connected with the vessel, but rendered capable of being readily detached in case of accident, and the propeller will be unaffected by the varying draft of the vessel, so as to act with regularity at all times. This is done by making the canal boat with a recess at its stern, capable of receiving a steam-tug of proper dimensions.]

WATER WHEEL—N. F. Burnham, of Laurel Factory, Md.: I am aware that the French turbine (Jonval) receives power from the lower part of the bucket the same as mine.

I do not claim, therefore, the lower end of the bucket, R.

But I claim, first, The concave hub as represented, in combination with the bucket as represented, which forms the wheel.

Second, I claim the chutes or guides in combination with the wheel, by which one-fourth, one-half, three-fourths, or all the water, can be admitted to the wheel, and in each case get the same percentage from the amount of water used.

MACHINE FOR BENDING WOOD—Alonzo Chubb, of Painesville, Ohio: First, I claim the combination and arrangement of the strap, U, with the guides, M, in the manner and for the purposes set forth.

Second, I claim making the guides adjustable by the use of the slots therein, and of corresponding ones in the bed timbers, as shown, and for the purposes set forth.

TRIANGULAR STAND FOR FURNITURE—Thomas W. Currier, of Lawrence, Mass.: I claim the arrangement of the triangular plates, B and C, with legs, A, on the axle, E, as and for the purpose specified.

VEGETABLE CUTTER—Wm. C. Davol, of Fall River, Mass.: I do not claim, separately, any of the parts shown and described.

But I claim the bed plate, A, having the hopper, D, attached, provided with the follower, E, the vibrating plate lever, B, provided with the double-edged knife, C, and hook, f, and attached to the bed plate, A, the w ole being arranged and combined to operate as and for the purpose set forth.

[This is a very cheap and efficient implement for slicing vegetables, either for the table or domestic use.]

BOOTJACK—Henry N. Degraw, of Green Island, N. Y.: I am aware that bootjacks with movable jaws have heretofore been constructed. I do not lay claim, therefore, on this part of my invention.

But I claim the arrangement of a guide piece, G, for the purpose of operating the jaws, C, as described, in combination with a swinging platform, D, which rests on pivots, c, at points between its front and back ends, so that it can be operated by throwing more or less weight on the heel or on the toes of the foot placed on the same, substantially in the manner and for the purpose specified.

[This invention consists in connecting a swinging platform to two movable jaws by means of a guide piece of such construction that the jaws open and close by raising or depressing the front end of the platform without the aid of springs, and the requisite degree of pressure can be obtained on the boot by the other foot of the operator.]

MEAT CUTTER—Benneville Dewalt and Charles E. Schrader, of Reading, Pa.: We claim the arrangement of the knives, D, in a screw form in different directions from the ends of the cylinder, B, to the center thereof, to discharge the meat at the adjustable opening, F, in the bottom, in the manner and for the purposes described.

CRICKET BATS—M. Doherty, of Boston, Mass.: I claim, first, Constructing the blade of the bat of a wooden shell with a filling of cork, or other materials, substantially as described.

Second, Constructing the handle of the bat of a wooden tube, with a central strip of whalebone, or other elastic material of similar character, running down into the blade, substantially as described.

[The object of this invention is to construct a cricket bat that will not be indented or bruised by the ball in use, and will not sting or jar the hand in striking the ball, like the common bat, and that, while being lighter, will send a ball a greater distance than the common bat.]

MACHINE FOR BENDING AND SETTING SPRINGS—John Evans, of New Haven, Conn.. I claim, first, The adjustable or sectional bed, formed of the bars, i, connected to the weights, k, and arranged substantially as shown, for the purpose specified.

Second, The adjustable clamps or straighteners, formed of the strips, b e, placed on rails or bars, F G, and arranged as and for the purpose set forth.

Third, The adjustable or sectional bed formed of the bars, i, as described, and the adjustable clamps or straighteners, formed of the strips, b e, placed on the rails, F G, in combination with the adjustable dies, M M, arranged to operate as and for the purpose set forth.

[This invention consists in using, in connection with suitable pressure or forming dies, an adjustable bed and side clamps, or straighteners, so constructed and arranged that the form of the bed may be varied to suit the desired shape of the leaf or portion of the spring to be bent or set, and springs of different sizes, and also all the leaves of an elliptic spring, including the plates, bent or set with the greatest facility, and with one and the same machine.]

PUMP—James L. Fagan, of Anaqua, Texas: I do not claim, separately, any of the parts shown and described, irrespective of their particular arrangement and adaptation for a submerged pump, for rotary pumps, or those having a partial rotating reciprocating movement, have been arranged similarly to the described invention.

But I claim the cylinder, A, and hollow shaft, B, connecting with each other as [illegible] when said cylinder is perforated as at h, and provided with valves i, and also provided with the piston, G, with the stationary plate, J, fitted within it, the whole being arranged as and for the purpose set forth.

[This is a simple, but very efficient submerged pump.]

COFFEE POTS—James H. Freeto, of Wheaton, Ill.: I claim the arrangement of valves, i and l, in the condensing chamber, H, in connection with the pipes, L and K, whereby the steam which escapes through the valve, i, is carried off and deposited, in a liquid state, into the spout, while at the same time, by the action of the steam, a jet of cold water is admitted into the chamber, H, substantially as and for the purposes specified.

I also claim closing the opening, C, through which the spout, D, communicates with the coffee pot, A, by means of a flat valve, E, which is operated by a rod, d, when the same is applied to a coffee pot which is hermetically closed by a gasket, g, in connection with the air tube, o, substantially as and for the purpose specified.

[The object of this invention is to preserve the flavor of the coffee, a great portion of which escapes with the steam when hot water is poured on ground coffee, and this is effected by arranging the valves connected with pipes in a condensing vesse , that the steam and contained flavor or aroma is condensed and carried back into the coffee.]

MOLDING COVERS OF COOK STOVES—George W. Gardener, of Troy, N. Y.: I claim combining with that part of the pattern which gives form to the recess of the cover, the pivoted projections, as and for the purposes set forth.

PLOWS—John M. Hall, of Warrenton, Ga.; I claim the arrangement of the adjustable coulter bar C, point, f', holes, f, shoe, F, mold-board, E, adjustable screw bolt, D, attachment, Z, pins, g, key, h, bolts, j, and slot in beam, A, operating as described, and for the purposes set forth.

CLOTHES-RACK—Winfield S. Foster, of Marilla, N. Y.: I claim the combination of the rods, B, and heads, A C, with the side pieces of the expanding clothes-rack, in the manner and for the purpose specified.

PLOW BEAMS—John S. Hall, of Manchester, Pa.: I do not claim a tubular plow-beam.

I claim an iron or steel plow beam, of an inverted U formed throughout its main length, and welded or compressed at its ends, and so made as to be capable of receiving the top of the standard into its hollow portion, and be otherwise conveniently connected to or with the other portions of the plow, and so as to make a cheap and efficient junction of the several parts thereof, and produce a cheap, strong and durable plow beam, as set forth.

MACHINE FOR CUTTING STRAW AND HAY—W. O. Hickok, of Harrisburgh, Pa.: I do not claim, broadly, connecting the pinion on the cutter shaft with the feed rollers, vibrating in guides.

Neither do I claim the arrangement of a shaker between the feed rollers and the cutters.

But I claim the arrangement, in combination with the upper or yielding feed roller, E, and the cutter shaft, f, of the coupling lever, G, when the said lever, G, connects the said feed roller, E, with the cutter shaft, f, by having its fulcrum around the said shaft, f, and also carries the pinion, 6, which connects the pinion, 7, of the shaft, f, with the spur wheel, 8, of the near journals of the feed roller, E, as set forth, the journals of the said feed roller, E, working in grooves, x, which are curved, so as to be concentric with the said cutter shaft, f, as described, the same operating together in the manner and for the purpose set forth and described.

RAILROAD SPLICE FOR RAILROAD TRACK BARS—Charles Hilton, of Albany, N. Y.: I do not claim the use of the plates nor the wedge, broadly.

But I claim deep wrought iron fish-plates secured to the sides of the rails by bolts or keys, and extending downward below the base of the rail, in combination with the gib and wedge, substantially in manner and for the purposes set forth in the specification.

HORSE AND OX SHOES—N. E. Hinds, of Cooperstown, N. Y.: I claim the curved or semi-circular form of the heel calks, with the corners thereof turned inwards or towards the central part of the shoe.

FOUNTAIN BRUSHES—L. B. Hoit, of New York City: I claim as a new article of manufacture a marking brush, consisting of a cistern, A, which is provided with a stationary valve c, and having the brush attached to a conical tube, G, which fits into a shell, E, and otherwise constructed substantially as described.

[This marking brush is connected to a cistern of marking ink by tubes or passages, and the cistern is provided with a valve, so that the flow of ink can be regulated as the person using the brush may desire.]

HARVESTERS—Moses G. Hubbard, of Penn Yan, N. Y.: I claim the combination of the curved portion of the finger bar hinged at a, with the spring, d, forming a yielding and elastic corner or point of attachment, of sufficient strength to securely connect the cutting apparatus thereto, substantially as and for the purposes set forth.

I also claim the auxiliary adjustable spring, H, or its equivalent, substantially as and for the purposes described.

STEAM BOILERS—Edward Kendall, of Cambridgeport, Mass.: I claim, first, The arrangement of the water walls, A A B B, the suspended water spaces F F, flues, H H, fire-box, G, lower and upper smoke boxes, J M, and tubes, L L, within the shell of the boiler, substantially as set forth.

Second, In combination with the described arrangement of water spaces and heating surfaces, I claim the arrangement of the hollow fire-bridge, O, the pipes, a a a and b, the cylinder, N, and pipes, c c, the whole operating substantially as set forth.

Third, The arrangement of the passages for the gaseous products of combustion, the exhaust steam, and the air in the air-heater, substantially as and for the purpose set forth.

[This invention consists in certain arrangements of water spaces, flues, and heating surfaces, whereby several important advantages are obtained. It also consists in a certain arrangement of passages for the air, the escaping gaseous products of combustion, and the exhaust steam in a heater for heating air to supply the furnace.]

PACKING BAR LEAD—Zebulon Kinsey, of Dubuque, Iowa: I claim the use of the bar or bolt, B, made substantially as described, when inserted in perforations made in bars or ingots, and clenched or fastened in the manner substantially and for the purpose aforesaid.

STEAM PRESSURE GAGE—Thomas W. Lane, of Meredith, N. H.: I claim so combining the indicating tube with the pipe through which the pressure within the boiler is transmitted to the gage, that the length of tube in either direction from its junction with the pipe shall not exceed a semi-circle, and placing the tube in such a position that it shall descend at every point towards its junction with and drain back into the pipe.

Second, I claim joining the pipe from the boiler with the indicating tube at a point between its two ends, and bending the latter as set forth, so that the ends of the tube shall be nearly over the points where its two branches are rigidly supported, whereby the tube is rendered less sensitive to the vertical shocks to which [illegible] cating tube symmetrically, or nearly so, upon opposite sides of a vertical line, as described, and connecting the two extremities of the tube with the lever, i, as set forth, for the purpose of preventing the horizontal vibrations of the tube from being transmitted to the index hand.

Fourth, I claim pivoting the lever, i, to the indicating tube without attachment to the case, for the purpose specified.

HOSE COUPLING—Robert B. Lawton and W. H. Bliss, of Newport, R. I.: We do not claim connecting the two parts or thimbles, C D, together, by means of a screw or pin passing through one thimble and fitting in a groove in the other, for such coupling or connection is well known and has been used, if not for the same, for analogous purposes.

But we claim the thimble, C D, being provided with the shoulder, b, and ground seat or packing, c, and the thimble, D, provided with the groove, e, with inclined sides and fitted within thimble, C, the above parts being used in connection with the conical roller or rollers g, fitted in the screw caps, i, and the whole arranged to operate as and for the purpose set forth.

[The object of this invention is to connect hose together in such a manner that a swivel joint will be attained, and at the same time certain provision made for compensating for the wear attending such connection, so that the coupling may always be kept watertight by the mere act of adjusting or connecting the parts together.]

FIRE-PLUGS—Joseph L. Lowry, of Pittsburgh, Pa.: I claim, first, Making a single chamber serve the purpose of a cross-pipe, when each main leading into said chamber, is furnished with its own stop cock, and access is had to each stop cock through said chamber for repairs, &c., thus making one chamber and one cover common to two, three, four, or more mains, substantially as set forth.

I also claim arranging the fire-plug immediately over the chamber, for the purpose of effecting a circulation of the water in the pipe between the main and the fire-plug to prevent its freezing, as stated.

I also claim in combination with the valve, v, and its wing, w, as described, the hollow set screws, s, for wasting the water from the fire-plug when said valve is closed, substantially as described.

I also claim the removable gasket, c, in the ends of the branches or bowls, y, so as to renew the seats for the valves, b, when necessary, without disturbing the main or stop cock, access to these gaskets being through the common chamber, j, as stated.

WATCH CASES—Louis Mabille, of New York City: I do not claim the movable plate, D, when applied and fitted to and combined with the case otherwise than as described.

But I claim the construction of the case substantially as described, with the front plate, D, fitted to the ring or frame, C, with a projecting rim, e, and bezel, i, all the way round, when combined with an internal cavity, d d, in the back, to receive and contain the said plate, when removed from the front.

[This invention consists in a certain novel construction of what is known as a "magic" watch case, whereby extreme simplicity is combined with neatness of appearance.]

CURTAIN LOCK FOR CAR SASHES—Samuel Marshall, of Wilmington, Del.: I claim the employment of the two metal plates, constructed as described, in combination with the button and button-hole of the carriage and curtain, and with the spring fastening, the whole being arranged and used in the manner and for the purposes set forth.

WATER GAGE FOR STEAM BOILERS—Alexander Miller, of Cleveland, Ohio: I do not claim, broadly, attaching an index to the stem of the alarm valve of an alarm water gage.

But I claim operating the valve, d, of an alarm gage to produce the alarm, when necessary, by means of a cam or wiper, h, on a valve stem, D, and a stationary inclined projection, g, on the socket or tube, A, or its equivalent, the several parts being arranged and applied in combination with a float attached to the stem, substantially as set forth.

[An engraving of this invention was published on page 157, present volume of the SCIENTIFIC AMERICAN.]

CORRUGATED IRON PAVEMENTS—James Montgomery, of New York, N. Y.: I claim, First, The arrangement and combination, substantially as described, of the unequal ribs, or corrugations, A and B, for the purposes set forth.

Second, The described form and application of the laterally projecting spurs, C, for the purposes explained.

Third, The dove-tailed groove shown applied to metallic paving, and employed as set forth, to retain within it concrete and other matter.

GRAIN SEPARATORS—Henry Montgomery and Simeon Howes, of Silver Creek, N. Y.: The aperture, U, when situated immediately below the inclined board, S, and in combination therewith, for the purpose specified.

LOCKS—L. F. Munger, of Rochester, N. Y.: I am aware that sliding-tumblers have been previously used, and also saw-plate, or thin, flat keys provided with notches of varying depths, corresponding with the varying positions of the slots in the tumblers; I therefore do not claim separately these parts.

But I claim the arrangement and combination of the knob, E, with the tumblers, C, and bolt, B, the said knob having studs, g, and h, out of line with each other, one stud, h, being in line with the bolt, and the other stud, g, being in line with the tumblers; so that when the keys G is inserted, one of the studs, g, shall pass by the tumblers, while the bolt, B, is shot out by the other studs, h, and when the key, G, is withdrawn, and the knob, E, reversed, the stud, g, shall lift the tumblers, and thus prevent the picking of the lock by the insertion of a key, all as shown and described, for the purpose set forth.

[This invention relates to an improvement in that class of locks that are provided with tumblers, and more especially designed for fire-proof safes, bank doors and other places where great security is required. The invention consists in the employment or use of a series of tumblers arranged relatively with a bolt and key-hole or socket, and used in connection with knob-bits, whereby the lock is rendered unpickable by a very simple arrangement of means and all the advantages of more complicated locks obtained.]

SCREW-PLATE—Putnam D. Nichols, of Hartford, Conn.: I do not claim as new the circular dies. I claim the adjusting steady pins and set-screws, with the sliding-plate, K, attached to the regulating-rod and screw, G, H, in the manner as described in combination with the method of adjusting and regulating the dies for operation, in the manner substantially as set forth.

BROOCHES, EAR-RINGS, &c.—Henry Oliver, of Philadelphia, Pa.: I am aware that sun pictures have been produced upon the inner surfaces of plates of transparent material, and that temporary concave fields have been suggested to overcome the spherical aberration of the lenses, in the production of pictures having a plane surface.

But I claim photographic or sun-pictures upon concave surfaces of glass, and backing them up with cement, in the manner and for the purpose substantially as specified.

BLIND FASTENING—Rufus Porter, of Washington, D. C.: I claim, First, The combination of the lateral catches with the elevated finger-socket, the whole constituting of a single plate, which is so formed, that while the catch-end thereof is horizontal, and constitutes right and left catches, and is connected to the bottom of the shutter, the opposite end is vertical, and is connected to the face of the shutter at some distance above the bottom thereof, and constitutes a finger-socket or hook near the hinged edge of the shutter, to be drawn back by a finger for the purpose of unfastening the shutter, when open, and closing the same as herein described.

LAMPS—Charles W. Richter, Sr., of Madison, Geo.: I claim the combination of chamber, D, and tubes, I, I, T, with the non-conducting medium, C c, above plate, P, the arrangement being substantially as described.

I also claim the manner of moving the wick within the tube, T, in combination with the construction described.

STALLS FOR HORSES ON SHIPBOARD—Samuel Samuels, of Brooklyn, N. Y.: I claim suspending a horse-box on board of a ship or other vessel, on pivots or centers, having their axis arranged transversely to the box, and parallel or thereabouts with the length of the vessel, substantially as and for the purpose set forth.

And I also claim combining a series of two or more so-suspended boxes, substantially as and for the purpose described.

[In the transportation of horses by sea they have always, previous to this invention, been liable to much injury from the motion—particularly the rolling of the vessels on board of which they are carried, as they have always been placed in fixed boxes or stalls, and the only means adopted for their protection has been the padding of the insides of their boxes or stalls, and the placing of broad slings under their bellies to relieve their legs. This invention is intended to enable them to be carried without such injury, and consists in suspending a horse-box on board of a ship or other vessel, on pivots or centers, which are arranged transversely to the box itself, but parallel or thereabouts with the length of the vessel, and in such manner that the box will, by the force of gravitation, remain with its bottom or floor in a horizontal or nearly horizontal position, notwithstanding the most violent rolling of the vessel, and thus in a great measure prevent the horse being thrown against its ends or sides. It further consists in combining a series of two or more so-suspended boxes by arranging them side by side with their suspending pivots in line with each other, and fastening them together, so that all will remain stationary or swing simultaneously, and the weight of the several boxes and of the horses in all but the one will tend to prevent any swinging movement being produced by the sudden movements of the horse in any one of the series.]

SEAL-PRESSES—Joseph Saxton, of Washington, D. C.: I claim, First, A sealing-press, operated by a lever, to which the stamp is attached by an adjustable joint, the whole being adapted to the purpose of sealing with fusible metal or alloy substantially as described.

Second, The guard for retaining the excess of metal driven off from the seal, in the act of making the impression.

CURTAIN FIXTURES—Henry C. Spalding, of Brooklyn, N. Y.: I claim, First, The narrow rim, f, in combination with a roller having end play, as described.

Second, The combination of the roller, flange and cord, as set forth.

Third, The combination of the two hangers with the roller, the cord and the [illegible], constructed substantially as described, and operating in the manner set forth.

© 1859 SCIENTIFIC AMERICAN, INC.

TREADLE-STAND—Henry C. Spalding, of Brooklyn, N. Y.: I claim a new and improved article of manufacture, a self-sustaining skeleton treadle-frame, composed of sections secured together at right angles, substantially as described, so that the frame is self-braced crosswise, and lengthwise with the table which it supports.

APPARATUS FOR VENTILATING RAILROAD CARS—Robert Taylor, of Reading, Pa.: I do not desire to claim, broadly, the forcing of air into railway cars by a blowing apparatus operating by the axles, as such a device is described in the patents of R. Cook, August 19th, 1851, and J. H. Taylor, October 30th, 1855, nor do I claim an air-pump, or air-pumps, operated by the axles, as they have been heretofore used in connection with pneumatic car-springs.

I also disclaim the rotating, ventilating valves, M, the same or their equivalents having been heretofore used.

But I claim the blowing cylinder, G, hung to one of the trucks of the car, and operated from one of the axles by means of an eccentric, D, or other equivalent device, in combination with the flexible or self-accommodating inlet and discharge-pipes I and H and the distributing-pipes, K, the whole being arranged substantially as and for the purpose set forth.

CHUCK FOR WATCHMAKERS' LATHES—G. H. Waldin, of Burlington, Iowa: I claim the use of the cylindrical core, or spindle, C, in connection with the thimble, d, for containing sealing-wax or its equivalent, the whole constructed and operated as specified.

CEMENTING ROOFS—J. L. G. Ward, of Adrian, Mich.: I do not claim, broadly, the use of alkaline silicates, applied as a protection to the walls or other parts of buildings; but I claim the covering of roofs of buildings by laying bricks or tiles, or slabs of other material, in a bed of cement consisting of an alkaline silicate, and subsequently treating the surface of said cement with an acid which combines with the alkaline thereof, and leaves a surface of pure silica, substantially as described.

[This invention consists in the covering of roofs by burying bricks or tiles in a cement consisting of an alkaline silicate, and subsequently treating the surface of such cement with an acid which combines with the alkali of the cement and forms a salt which when washed away leaves a surface of pure silica that is unpervious to water, thus producing a weather-proof roof of a very superior character.

PESSARIES—Francis F. Wells, of Texana, Texas: I claim the combination with the ring, A, of the hinge-jointed and slotted standing supports, c, c, and their stem, d, the hinged sliding-support, g, the hinged arm, i, the collar, m, or its equivalent, and the plate, B, the whole applied and operating in relation to each other, substantially as set forth.

[By this invention what is known as the ring-pessary is supported upon the exterior of the body, thus avoiding all except the requisite internal pressure or support.

APPARATUS FOR HANDLING HIDES—Charles Weston, of Salem, Mass.: I claim the apparatus described, for keeping hides in motion, while exposed to the action of the tanning liquid, the same consisting of parts constructed and arranged, in relation to each other, as described, so as to operate substantially in the manner and for the purposes set forth.

FEEDING MECHANISM FOR SAWING MACHINES—Philip P. Weis and F. Schutte, of Philadelphia, Pa.: We claim the adjustable frame, N, with its rollers, h, the pressure-frame, P, with its rollers, i, and the feeding-screws, M, in combination, the whole being arranged substantially as and for the purpose specified.

KEY-BOLT FOR ATTACHING CARRIAGE THILLS—G. P. Wilhelm, of Bridgeport, Pa.: I do not claim as new of themselves either the key-bolt or the spiral spring, but I claim the manner described of fastening shafts and poles to carriages by the arrangement of the bolt B, b, spiral spring, c, and clips, c,' arranged and operating as set forth.

HARVESTERS—Walter A. Wood, of Hoosick Falls, N. Y.: I claim, First, Connecting the bent bar, J, to the axle, and allowing its other end free vertical motion between guides, substantially in the manner described.

I also claim, in combination with the bent bar, J, for sustaining the finger and cutter bars, the continuation of the finger-bar, and its attachment to the main frame, substantially in the manner and for the purpose set forth.

MOWING-MACHINES—Walter A. Wood, of Hoosick Falls, N. Y.: I claim connecting the bent-bar that carries the finger and cutter-bar to the main frame by the spring-plate, M, and to the axle by the loop, d, so that the finger-bar may rise and fall independently of the wheel or main frame, or the main frame independently of the finger-bar, substantially as described.

MACHINES FOR CORKING BOTTLES—Lewis L. Chichester, of New York, N. Y., (assignor to David L. Winthringham), of Jersey City, N. J.: I do not claim, broadly, the employment or use of toggles for operating the bar, F, for they are a well-known mechanical device, and have been used for analogous purposes; but I claim the toggles, E, E, frame, G, and bar, F, provided with the plungers, d, in connection with an adjustable bottle-stand, K, and bar, C, provided with the tubes, a, a', a," for the purpose specified.

I farther claim the particular manner of adjusting the bottle-stand, K, to wit: attaching the same to the frame, G, by means of the lever, I, bar, J, arms k, k, cross-bars, m, and plates, l, substantially as shown and described.

[In this invention toggles are employed, connected with a lever-frame and driving-bar in conncition with an adjustable bottle-stand, so that corks may be driven into bottles with great facility, and the same machine rendered capable of corking different sized bottles, and also of driving the corks a greater or less distance into the necks of the bottles.

CATAMENIAL BANDAGES—Charles E. Clark, (assignor to himself and George W. Clark), of Boston, Mass: I claim my improved manufacture of menstrual receiver, as made of two inflatable, water-proof cresentic-shaped vessels, united by a water-proof system, and arranged together and with the septum, and provided with means of supplying them with air, and discharging it therefrom, substantially as specified.

ELECTRO-MAGNETIC FIRE-ALARM APPARATUS—Moses G. Farmer, of Salem, Mass., (assignor to William F. Channing), of Boston, Mass.: I claim the combination of two or more key-boards or fire-alarm strikers, constructed and operating substantially as described, with one or more electro-telegraphic alarm-machines, in the same closed electric circuit or independent closed electric circuits by means of a mechanism that will make and break a circuit, as shown and described.

RAILROAD CAR SEATS AND COUCHES—Jonathan Good, (assignor to himself and B. L. H. Dabbs), of Philadelphia, Pa.: I claim the arrangement and combination of the pivoted horizontally and vertically-moving plate, C, curved ratchet plates, J, rack extension, D, and pinion, C, as and for the purpose shown and described.

[This is an improved sleeping-car which has seats that change to comfortable couches at night, and in which there is room for the traveler to stow away his clothes.]

STRAW-CUTTERS—William Hinds, (assignor to Jerome Hinds), of Little Falls, N. Y.: I claim the arrangement of the cutters, c. c, in combination with the cutter, n, fig. 1, constructed substantially as and for the purpose set forth,

MACHINE FOR FINISHING CARBOYS—Lyman Hyde, of Ellenville, N. Y., (assignor to the Ellenville Glass Company): I do not claim the shears or formers, C, for they have been previously used, but I claim the shears, C, treadle, F, or its equivalent, mandrel b, and furnace, B, placed within a suitable frame, A, and arranged for joint operation, substantially as and for the purpose set forth.

The object of this invention is to enable heads similar to those on the necks of bottles and small glass vessels to be formed on the ends of the necks of carboys and other large glass vessels of similar or approximate form. Large vessels of this sort have hitherto been "unfinished," as it is technically termed, that is to say, the ends of the necks have been left plain without a head or finish, in consequence of the inability of the workman to reach the neck of the carboy and perform the necessary work; the finish on the vessels being hitherto done exclusively by manual labor, This invention performs the operation perfectly by mechanical means.]

BED-BOTTOM—A. W. Morse, (assignor to himself and R. B. Robie), of Eaton, N. Y.: I claim the combination and arrangement of the rods, B, gear-wheels, A, staples, G, pins, H, wires, C, or their equivalents, lever, F, ratchet roller, D, pawl, E, for the purpose of giving the proper tension lengthways and sideways simultaneously, substantially as set forth.

BLACKING—L. R. Rockwood, (assignor to J. L. Clough), of Worcester, Mass.: I claim edge blacking, when composed of the mentioned materials in the proportions and manner substantially as set forth and described.

RE-ISSUE.

EXTENSION FINGER-RINGS—Samuel Friend and George Seiler, of New York, N. Y. Patented December 21, 1858: We claim a divided springing-ring constructed substantially in the manner and for the purposes specified, whereby the springing of the ring permits the same to pass the joints as set forth.

DESIGN.

STEREOSCOPE CASES—William Loyd, of Philadelphia, Pa.

ADDITIONAL IMPROVEMENT.

IMPROVEMENT IN SPRING-BED BOTTOMS—Henry F. Smith, of Washington, D. C. Patented October 6, 1857: I claim the supporting the fixed end of the longitudinal slats in spring-bottom bedsteads by means of longitudinal spring-bars, substantially as described, so that the elasticity or yielding of both ends of the slats may be equalized for the purpose set forth.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of $5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY,
No. 37 Park-row, New York.

American Influence Abroad.

Virgil, in his day, sang songs and lauded high arms and prowess, deeds of heroism and martial glory, and it has long been an established idea that the greatness and the glory of a nation which hand it down to posterity are deeds upon the battle-field, and honors won by human bloodshed. This idea is false—a slander on mankind—a disgrace to the race. All the nations and cities of antiquity are preserved in our memories more by the works of their artisans and artists, than by their conquests or heroes. Who but the deep student knows aught of Babylonish arms? but every one is familiar with the hanging gardens of that famous city. The history of the early rulers of Egypt is shrouded in mystery; but the Lake of Meros, the Pyramids, and her excavated sepulchres remain as testimonials of her greatness. Greece, Rome, and the early Germanic Empire have all left their mark upon succeeding ages, by real work that was done in them, and the skill which their artificers possessed.

And so it is with *us*. The value of labor and its productions is daily becoming more felt, and hourly receiving a wider acknowledgement. Though we have few conquests of arms to boast of, and no graves of mighty dead to revere—save one, and that we have too little patriotism to buy at once—though we have no long line of ancestral greatness to look back to; yet we have educated labor to be proud of, and skilled work that is winning for America a name among the nations of the world of more value to real progress than conquest, shrines or ancestry. Americans, by their mechanical skill, are contesting in the glorious field of the liberal arts, and are gaining peaceful victories on the continent of Europe of more importance to the world than Austerlitz or Waterloo. Reaping machines are greater civilizers than swords, and Yankee unpickable locks greater securities to property than jails or gallows. We are led to these observations by the number of patents which our countrymen are continually securing in foreign countries—a number which is daily on the increase; and a few important ones, recently secured in England through the Scientific American Patent Agency, we will now proceed to notice:—

Stephen D. Carpenter, of Madison, Wis., has patented an improvement in operating railway brakes by electro-magnets. The mechanism employed is rendered very simple, and facility is afforded for graduating the pressure of the brakes upon the wheels. The brakes are attached to horizontal bars placed before and behind the wheels, and are suspended from centers above the wheels. Electro-magnets are adapted to the brake-bars by means of links and screw bolts, so as to admit of adjustment when required. The electro-magnets are supported in a horizontal position by means of pendant springs or arms, which will allow them to move a sufficient distance in a horizontal direction to bring the brakes against the peripheries of the wheels. The electro-magnets are connected by means of suitable wires with a battery, and when the circuit is closed, they will be attracted towards each other, and will then draw up the brakes against the wheels, and retard the carriages.

William Clemson, of East Woburn, Mass., has patented an improved method of grinding circular saws. The object of this invention is to grind these articles to a uniform thickness, and with their faces perfectly even or free from the wavy appearance so frequently produced by some of the methods of grinding generally practised, and to finish them perfectly from the center or eye. One of the improvements consists in grinding one side of a saw at a time, while its opposite side is supported by a roll, which has a rotary motion at the requisite speed for the purpose of causing the saw to rotate at the speed desired. Another improvement consists in the employment of a rotating clamp applied to the saw during the grinding process, in such a manner that it derives rotary motion from the saw through the agency of friction, and by the momentum acquired by such rotary motion is caused to control and render uniform, or nearly so, the velocity of the rotation of the saw, notwithstanding any differences of thickness of the saw-plate, and consequent tendency to variation in the action of the feed roll or other feeding contrivance upon the thicker and thinner portions of the plate. The spindle which carries the saw is, together with the friction clamp, mounted in a movable or traveling frame, whereby the saw may be moved up to the grinding surface as the grinding operation proceeds. The saw is also arranged to rotate in and during the grinding process upon a flat pivot, which is of sufficient width in one direction to fill the eye of the saw and steady the saw as it rotates, and is thin enough in a transverse direction to permit the grindstone to operate over the whole surface of the saw.

Edward Dugdale, of Burlington, N. J., has patented an improved method of constructing grates for furnaces, locomotives, stoves, &c., which consists in the employment of a series of flexible bars, composed of chains, metal rope, or linked rods, arranged side by side, and attached securely by their ends at the back and front or sides of the fire-box or furnace, with sufficient slackness to permit them to swing or be shaken, either by the movement of the furnace, as in the running of a locomotive, or by suitable mechanical means, for the purpose of causing them to work against or relatively to each other in such a manner as to prevent the adhesion of "clinkers" to them, and to cause the ashes and dirt from the fire to work down between and through them, and thus make their escape from the fire.

Martial Dimock, of Mansfield Center, Ct., has patented an improvement in sewing machines, relating especially to that class in which a needle with an eye near the point is used to carry a thread through the cloth to be sewed, whether one or two threads be employed. This part of the invention consists in the employment of a pair of elastic nippers applied on the opposite side of the cloth or material to that on which the needle enters it, and operating in combination with the needle to seize the thread as it is protruded through the cloth, and draw it away from the needle in such a direction and to such a distance as to leave plenty of room for the passage, between it and the needle, of the looper, shuttle or other contrivance operating in combination with the needle to effect the enchaining of the single thread or the interlacing of the two threads, thereby preventing the failure of the looper, shuttle, or equivalent to enter the loop, and the consequent missing or dropping of stitches. A second part of the invention consists in a looper of novel description, operating in combination with a needle having an eye near the point to sew with a single thread in what is known as the chain and tambour stitch.

Messrs. Lindsay & Geddes, of Westville, Conn., have obtained a patent for some improvements in the machinery employed in the manufacture of paper. The invention is, in making the "lip" or basin which conducts the pulp from the vat to the endless wire apron of two parts, and in connecting these parts with the "deckles," which, as well as the "deckle straps," are, by a novel mechanism, rendered susceptible of lateral adjustment. The "deckles" determine the width of the pulp on the endless wire apron, and consequently also that of the paper, and as the two parts of the "lip" or basin which conducts the pulp to the apron are connected to the "deckles," one to each, the said two parts of the "lip" or basin will be moved simultaneously with the "deckles," and consequently the "lip" or basin will expand or contract in width, so as to correspond with the width or space between the "deckles." The machine is also provided with a novel way of adjusting the usual gage employed for the even distribution of the pulp on the endless wire apron.

Such inventions as these, useful and new, are the best means we can adopt to keep our place in the ranks of the nations; and we hope that our citizens will ever be sending their improvements across the sea.

Steam Traveling on Ice.

A very novel steamer is now being constructed at Prairie du Chien, on the Upper Mississippi, by Norman Wiard, of that place. It is designed for traveling on the ice, and making rapid journeys on the frozen rivers and lakes of the north-western territories. It is 70 feet long, 12 feet beam, and is supported on a pair of large skate runners, like a common ice-boat. The bottom of the hull and part of the sides are of iron; it is to have a driving wheel at the stern, operated by two locomotive engines and will be enclosed like a railroad car. It is to be steered by a griping rudder, and will have a steam brake of great power. A speed of 40 miles per hour is expected to be attained by it on smooth ice; and it will also dash through snow three and four feet in depth. There are 40 mechanics now engaged upon it and it is expected to be completed early this month. It is contemplated that it will carry the mails and 75 passengers on the Upper Mississippi from Prairie du Chien to St. Paul—300 miles—in one day. If this steam-ice-boat is successful it will introduce a new era in winter traveling in the north.

FIRE-PROOF PAINT.—At a recent fire in Flushing, L. I. some canvas roofing was found to be nearly fire-proof; in a few places the canvas was destroyed, leaving a shell of paint perfectly untouched, and with few exceptions the whole roofing was untouched by fire. The Flushing *Journal* informs us that the canvas had been painted with fire-proof paint by Mr. Quarterman, of 114 John St., this city, and we take great pleasure in recording the efficiency of his invention.

© 1859 SCIENTIFIC AMERICAN, INC.

New Inventions.

Lake and Ocean Navigation.

A firm in the city of Detroit advertise for no less than twenty first-class vessels, to sail from lake ports through the chain of lakes and St. Lawrence, thence across the ocean to Europe. Their cargoes will be staves, choice timber, and flour. A large trade between the interior of our continent and Europe will soon be established; and much of the produce that was at one period sent from the West by canal to New York to be re-shipped, will be forwarded direct to Europe.

Boilers of Steamboats.

The Board of Steamboat Inspectors of Buffalo have issued a new order, intended to secure the greater safety of passengers on Lake steamers. Hereafter no new boiler intended to generate steam in passenger steamers will be passed by this Board unless the same shall be submitted to their inspection without any coating of paint, or other substance calculated to cover up the marks or any imperfections in the iron of which the same shall have been manufactured.

To Rescue Persons on Fire.

Several deaths have recently taken place by the light dresses of ladies and children catching fire, and for the want of sensible means employed to extinguish the flames. The first thing a lady should do, in case her clothes take fire, is to lie down on the floor, roll over and over, and shout "Fire!" "Help!" If a second person is at hand, and witness such an accident, he or she should at once lay the unfortunate person on the floor and roll her over in the carpet or whatever can be most promptly used to exclude the air from the flames.

Facts about Cotton.

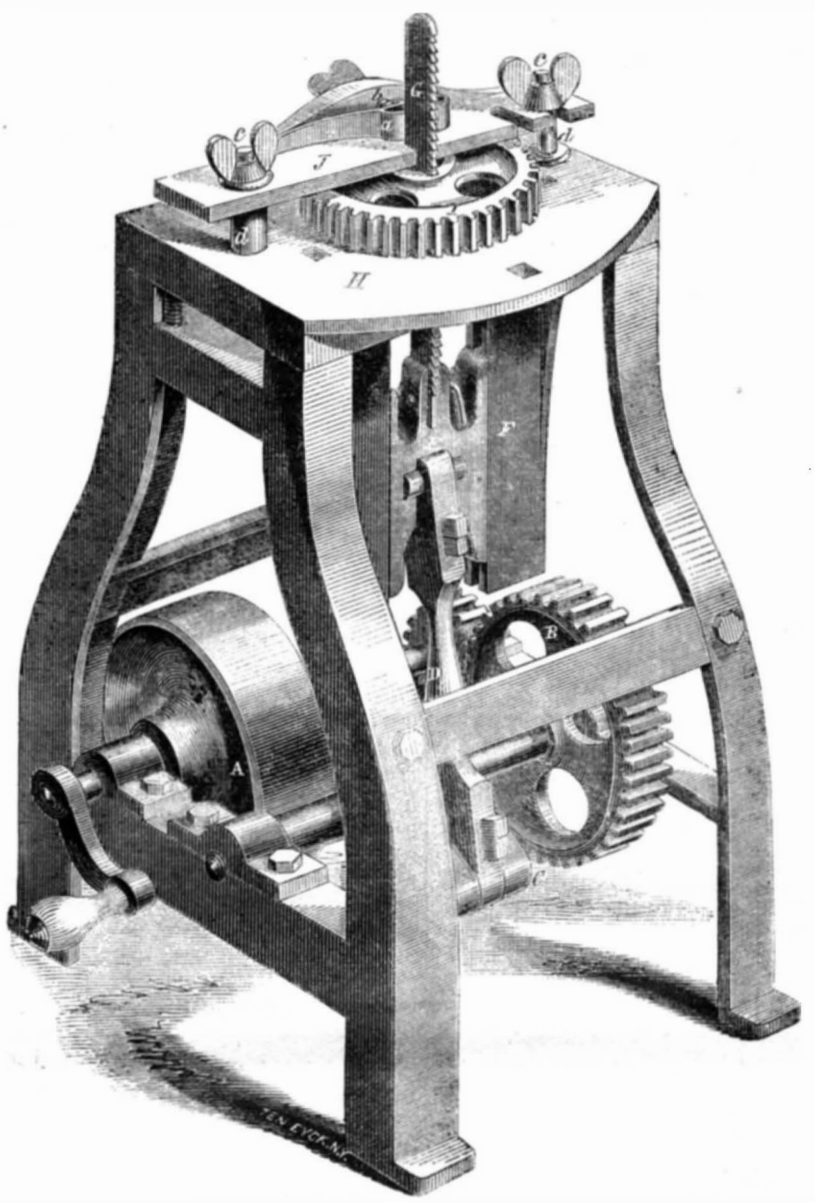
The quantity of cotton-wool consumed in 1850 by the chief cotton manufacturers of the world was 795,000,000lbs., more than half of which was used up in Great Britain. The total value of the latter, when manufactured, has been stated by Mr. Henry Ashworth to be $307,400,000, of which only about one-third may be estimated as the value of the raw material—the cost of labor, machinery, and profits being estimated at about $187,500,000. The effect of a temporary cessation of the wonted supplies of cotton would be to throw hundreds of thousands into beggary; and all the landed property in the north of England would soon soon be swallowed up to maintain the population thus thrown upon the poor-rates for support.

New Slitting Machine.

It is scarcely necessary to inform the readers of the SCIENTIFIC AMERICAN for what purpose this invention is designed, as there are few of them who are not daily associated with band wheels, cog wheels, or wheels of some kind, that have to be mounted on an arbor, and they well know the use of the slit; but for the benefit of the few who do not, we will give a brief explanation, and then describe this machine. It is seldom that a wheel and shaft can be cast together, and as the shaft is round, the center of the wheel is bored round too, in order that it may easily slide on to take its proper position on the shaft. The wheel, however, has to be rotated by the shaft, and to accomplish that against any resistance, a portion of the shaft is filed flat, and a small slit is cut in the internal round portion of the wheel, so that when the slit in the wheel is brought over the square portion of the shaft, a key can be driven in, which will hold them tight to the shaft, arbor, or pinion. This slit is also called a "key-way."

The machine which is the subject of our illustration is the invention of T. R. Bailey and G. W. Hildreth, of Lockport, N. Y., and it is designed to cut the key-way in wheels.

HILDRETH & BAILEY'S SLITTING MACHINE.

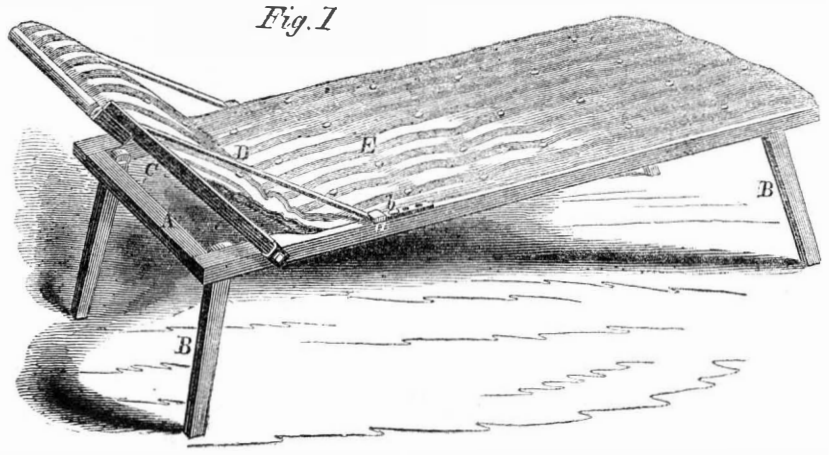


Being mounted in a suitable frame, power is received from any convenient motor by the band wheel, A, or crank handle, and by a cog wheel on the end of the shaft of A, the crank, C, is put in motion by the cog wheel, B. To this crank, C, a connecting rod is attached, that is also connected to a cross-head, E, which it moves up and down in guides or ways, F. To the cross-head, E, is secured the saw, G, which passes through the center of the wheel, I, in which the slot is to be cut. The wheel lies on a table, H, and it can be secured to it by clamps passing through the table itself, as well as by a permanent clamp, J, that is held down on the wheel by the screws, *d*, and nuts, *c*. The saw, G, works up and down in a slot in J, and it is pressed against the inner periphery, or provided with the requisite feed by a spring, *a*, that can be tightened by a screw, *a*. This is a remarkably simple machine, and at the same time a very efficient one, as it cuts the key-way perfectly true, and very quick.

The inventors will be happy to furnish any further particulars upon being addressed as above.

FAVOR'S INVALID CHAIR AND BED.

Fig. 1

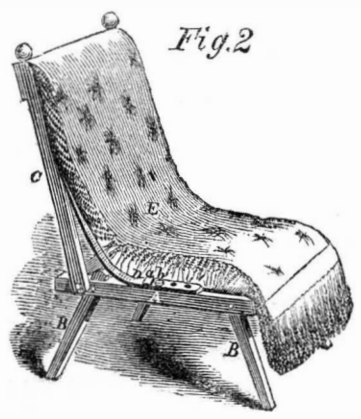


Among "the ills which flesh is heir to," there are very many, the radical cure of which is only to be effected by rest. The poet has called it "Nature's sweet restorer," and sleep, the acme of all rest, Shakespeare has defined as "Nature's soft nurse." So we have poetic as well as medical authority for making the assertion. When in a state of health a man can sleep anywhere and on anything, if tired; some can even fall into the "arms of Morpheus" leaning against a tree, and others court the "drowsy god" under the benign shade of a stone wall. But when sickness has wasted the "human form divine," and weak inanation preys upon the mind and body of a poor sufferer, some truly comfortable and simple device must be had recourse to, in order that a change of position may be easily effected without disturbing the patient. This device should be cheap, portable, and simple, and such a one is found in the subject of our engravings.

Fig. 1 represents an invalid bed which is also suitable for the camp or the emigrant. A rectangular frame, A, is supported by four short but strong legs, B, which are secured to A by a pin, and they can be folded inside, or kept firmly in the position shown by a small catch. The head-board, C, is pivoted to the frame, and the sacking or mattress, E, is attached to its top rail, so that the elevation of the head-board forms a pillow of any hight, thus raising the body to that angle at which the person can secure the most rest, or at which the greatest comfort is obtained.

The proper angle of the head-board is arranged by having it supported by two straps or cords, D, attached to its upper end, one on each side. The other end of these cords or straps has a metal strip secured to it, and this strip is perforated by a number of holes, which, passing over a stud, *b*, in the frame, A, hold the head-board in any desired position. The strap passes also through a guide, *a*, to hold it in the proper line. The sacking can be attached by ropes and slats, or by ropes alone, or nailed to the frame, as may be most convenient, and it forms one of the best invalid couches which we have ever seen.

Fig. 2



The chair, which can also be made into a couch, and is for the invalid a truly *easy* chair, is represented in Fig. 2; and it will be seen at a glance that its construction is essentially the same as the couch, the back, C, being placed instead of a head-board, and the cushion, E, replacing the mattress. There is one use to which we think these couches and beds are especially adapted, and that is for the country surgeon or druggist; they take up so little room and are so easily and quickly fixed, that they are the very thing for accidental sufferers who may chance to be brought in, and require an operation or amputation before they can be removed with safety; but everywhere and anywhere they will be found convenient and comfortable, and, as we before remarked, cheap.

They were patented April 20, 1858, by Z. C. Favor, of Chicago, Ill. Any further information can be obtained from the agent, E. H. Brown, of the same city.

ICE-CREAM.—I. S. Clough, of this city tells us that he has discovered a new method of making this luxury, the only fault being that it can only be made in winter, and when the principal ingredient of his mixture—icy snow—is on the ground few persons want a cooling drink. But here is the recipe:—Take a tumbler full of clear icy snow, place a teaspoonful of white sugar on it, and add a little milk; mix them with a spoon and eat it as a tonic for bad spirits.

The hardness of a lobster shell resists expansion; but to provide for the growth of the fish at certain seasons of the year, the shell becomes soft, the animal then swells its body, and by a tremendous motion casts it off; in this defenseless state it retires into holes in the rocks; in the space of forty-eight hours a new concretion is formed.

A piece of pine wood forced down into the sea to the depth of 200 fathoms, becomes so compressed, that when drawn up again, it is found to be so heavy as to sink like a stone when thrown into the water.

© 1859 SCIENTIFIC AMERICAN, INC.

Scientific American.

NEW YORK, MARCH 5, 1859.

REMOVAL.

The SCIENTIFIC AMERICAN *Office has removed from its old location,* 128 *Fulton st.* (*Sun Building*), *to No.* 37 *Park Row* (*Park Building*), *where all letters, packages, and models should hereafter be addressed. Entrance is had to the office also at No.* 145 *Nassau st. Munn & Co.'s American and European Patent Agency is at the above office.*

Is Electricity Hydrogen or Iron?

Our attention has been called to an article which appeared in the *N. Y. Tribune*, of the 15th ult., by E. F. Barnes. Its object is to adduce what is supposed to be some proof in favor of the hypothesis that hydrogen is iron in a gaseous state, and that electricity is hydrogen plus heat. We will endeavor to present the substance of the article briefly, and then point out the defective character of the proofs and conclusions advanced in support of such a theory.

In Groves' battery the nitric acid contained in the porous cup soon turns blue in color. This effect suggested to Mr. Barnes that there must be copper present to cause this; and upon a test being made, he found this was the case. The wire between the two poles was copper; when an iron wire was used for the same purposes there was no such effect. As is well known, the copper was carried by the electric current, however mysterious the action, through the porous cup into the nitric acid. From this it is concluded by Mr. Barnes, that iron is electricity, but he does not state whether he tested the nitric acid for iron as he had for copper; and as the nitrate of iron is an amber color, the same as the acid itself, while the nitrate of copper is blue, he in all likelihood was deceived by *appearances.*

He says, it is well-known that an iron wire heated to redness and plunged into a vessel of oxygen gas will burn rapidly, and the product of such combustion is water. Water is composed of hydrogen and oxygen. Is iron therefore solidified hydrogen in whole (if a simple is claimed), or in part if a compound. The late Prof. T. Spencer, in his chemistry of common life, claims to have demonstrated that electricity is hydrogen plus heat.

"Here is a field for the scientific and curious. I should be pleased to see the subject commented upon by others."

From some of the characteristics of hydrogen, the base of it has been supposed by chemists to be a metal, but as yet this is mere supposition. To found such a theory on the above would be erroneous. The only data for such a conclusion, as it regards hydrogen being iron in a gaseous state, is based upon the statement that when a red-hot iron wire is plunged into a vessel containing oxygen gas, it is consumed, the iron disappears, and nothing is left but water. Were this true, the conclusion would be inevitable that hydrogen was iron in a solid condition; but it it is not true, and we cannot conceive whence Mr. Barnes derived such information. When an iron wire is burned in a vessel containing oxygen gas, neither water nor a gas is the result of this action, but a solid which is common rust—the oxyd of iron. And it is found to be just so much heavier than the original iron wire, as the amount of oxygen which united with it; there is not an atom of hydrogen present. There is no metal further removed, apparently, from hydrogen than iron. In commerce there is not a pound of this metal obtained pure; that which is called iron is an alloy of carbon, silicon and iron. To obtain it pure for experimental purposes in the laboratory, it is fused in burning hydrogen, which removes all the impurities and leaves pure iron as the result. This fact should convince any person that the hypothesis advanced by the writer in the *Tribune*, that iron is the base of hydrogen, is destitute of the least foundation in chemical science.

Young's Coal Oil Patent.

The specification of James Young's patent for making coal oil, published on page 116, present volume of the SCIENTIFIC AMERICAN, has attracted considerable attention, and many letters have been addressed to us in reference to it. One party admits that it is a broad patent, covering, abstractly, the manufacture of oil from bituminous coals, but asserts that it does not apply to bituminous shales. Now we confess we do not see the force of this position. It is our opinion that Young's patent covers the manufacture of oil from bituminous shales, as well as coals. In his specification he speaks of the "treatment of certain bituminous mineral substances," specifying three as best fitted for the purpose, and particularly refers to some of them as containing a larger amount of mineral matters, but as not materially interfering with the performance of his process. Now if oil can be obtained from shales by the process described and claimed in Young's patent, it will not be easy for parties to dispose of it by mere words; they must upset his patent, else they may find themselves in an uncomfortable box.

The following letter will show how the subject strikes one who is engaged in the business:—

MESSRS. EDITORS—In reading over your last number, I remark a description of Mr. James Young's patent for the manufacture of coal oil by the distillation of coal in retorts. His claim (the distillation of oil from coal by heating it, and then condensing the rising vapors in a cooling worm) covers the whole ground; all coal oil manufacturers are eventually infringing upon Mr. Young's patent, and the gentlemen interested in the same should not lose time to cash their fees. In the year 1842 I lived in Austria, and witnessed the process of distilling oil from cannel coal; it was put into an iron vessel, and distilled through a condensing worm. These facts could be identified, if important, provided the costs were paid. Mr. Young's patent is rather lengthy. What American manufacturer will not get frightened at the idea of keeping coal oil *a whole week* at 100° Fah.? Why, it must take nearly three weeks to bring the oils into marketable condition. Does Mr. Young really use *red* litmus paper, as stated in your journal? If so, it would give a good patent claim; we have enough blue papers in this country, a little red would be a change.

Please, Messrs. Editors, do not frighten our capitalists. There are now a great many ready to engage in the manufacture of coal oil and the mining of cannel coal. Tell them that there are better and much quicker processes of manufacturing coal oil and paraffine, all invented in this country, and which can be secured at less cost than those of English importation. A. L. FLEURY.

Baltimore, Feb. 10, 1859.

Our correspondent treats this matter rather flippantly. Supposing he did see oil extracted from coal in Austria seventeen years ago, it would not affect the question of the validity of Young's patent. If the process of making it had not been published, nor the manufacture of it introduced into our country until the patent referred to was secured, our law would protect the patentee. Our correspondent cautions us not to frighten our capitalists, who are ready to engage in the business of manufacturing coal oil. We have no desire to frighten any one; but we consider it our duty, as faithful journalists, to spread before our readers correct information upon all subjects within our legitimate sphere. The advantage of our position is that we have no pecuniary interests, directly or indirectly, in the business of coal oil making, and can, therefore, look at these questions from an unselfish point of view. We know nothing of Mr. Young, or of the parties interested with him; but he is a patentee, under our laws, and whether imported or domestic, his rights are the same to us, and also to our laws.

Our correspondent thinks that American manufacturers of coal oil would never have the patience to wait on a process three weeks in order to bring the oil into a marketable condition. We are not blind to the fact that our people are of the go-ahead stamp, and as there is a great deal of complaint against much of the coal oil vended in the market, it might serve the consumers interest, and possibly the makers, in a long run, if the latter would but exercise a little more patience—even to keep, if need be, the coal oil a whole week at 100° Fah.

Cocoa Oil.

If the fruit of the cocoa-nut is grated down finely, then boiled for half an hour in a considerable quantity of water, and allowed to stand for a few hours afterwards, until it becomes quite cool, a thin stratum of oil will be found floating on the surface. It is devoid of smell, is clear as water, is excellent for burns, and it also makes a good toilet oil, if kept in close bottles. In the island of Ceylon, the oil of the cocoa-nut is used for burning in lamps, and in England great quantities are employed in making soap. When the oil is made in large quantities, the nuts are rasped in a mill, then placed in coarse bags, and submitted to severe pressure in powerful presses. A considerable amount of moisture is extracted with the oil, but this is all dispelled by boiling, and the oil obtained is of very good quality. Ten nuts yield about one pound of oil.

A cosmetic called "cocoaine," because it is of a white, milky appearance, is sold at pretty high prices. Such preparations are very deceptive; their names afford no reliable data for judging of their composition. A milk-white preparation resembling it can be made by dissolving olive oil in a weak solution of pearl ash and a little ether, and it can be scented with bergamot, oil of cinnamon, or any other perfume.

Canals versus Railroads.

In Indiana, the canals seem to be dying out. The receipts of the Wabash and Erie Canal, in that State, were no less than $193,000 in 1852 (the year when railroads began to compete with it), but since that period they have fallen off so rapidly that in 1858 they only amounted to a little over $60,000—an amount which really does not cover its working expenses. Unless the State grants money to maintain this canal in working order, it will have to be abandoned at no distant day. This would prove very detrimental to the interests of those who dwell in the towns and villages through which it passes, and also to the farmers in the vicinity. The only remedy which we can recommend is to adopt steam as the propelling agent, so as to enable the boats to compete on more favorable terms with the railroads. Let the commissioners or trustees who have the superintendence of this canal endeavor to galvanize some steam life into it.

Museum of Woods.

A new room has recently been opened to the public in the British Museum, London, for the above purpose. It contains sections of trunks of trees, showing their structure; also specimens of wood in a polished and unpolished condition, from every part of the world. It seems that a large collection of California woods has already been secured in London, and some of these are very beautiful for cabinet-work. There could not be a more useful room of a museum established in any part of our country than one containing specimens of all our native woods, in the rough, and also in a polished state. We recommend it to the attention of our State governments as worthy of adoption.

The Atlantic Cable Again.

By recent accounts from Europe, we learn that Mr. Henley has been sent out to Newfoundland, to try and galvanize some life into the Atlantic cable at this end. He might as well try to resuscitate a dead whale. A banquet was recently given to Professor Thomson, in Glasgow, in honor of his abilities and the services which he rendered without fee or reward in laying the Atlantic cable. The only signals of reliable character ever sent through it were transmitted by his instruments, which are simple, delicate signalling galvanometers. He is of the opinion that another cable of superior construction will be laid in the Atlantic at no distant day, but he has no hopes of the present one ever being able to convey messages.

It has been announced that a fresh company has been organized in London for laying a new cable, constructed in a totally different manner from the last. Its whole strength is to be placed in the conducting wire inside, and no outside spiral shield is to be used.

Constantinople Enlightened

Istamboul—the City of the Sultan—is fast becoming infidel, and it promises at an early date to be illumined with a stream of light from Christendom. Gas pipes are now being laid down, by the order of the municipal council, in its streets which, heretofore, have been been almost impassable after dark. Knowledge and science are bound by no conservative prejudices on national peculiarities. They attend the footsteps of the enterprising in all ages, and desert the laggards. in the progress of civilization. Athens, once the school and center of the world's civilization in arts and sciences, has lately been illumined with gas by English mechanics; and Constantinople, once the focus of eastern learning, is now seeking light from the same source. Schools of philosophy and art flourished at Athens and Constantinople, when the people of England lived in caves and had no written history. Rome—the Imperial City—once mistress of the world, has also lately been receiving gas light from England, once her furthest and most insignificant colony.

Another Turn in our History.

The period has again arrived for many of our readers to renew their half-yearly subscriptions for the SCIENTIFIC AMERICAN; we believe they have only to be reminded of this, and they will do so with their usual promptness. None should neglect to secure all the numbers of every volume, as a single number forgotten or overlooked may contain the very information which a reader has been in search of, for years. Money cannot be invested to a better purpose by our inventors, mechanics, and artisans. As heretofore, all their wants shall be consulted by us, and endeavors made to supply them from every reliable source. Our readers have a great advantage over others engaged in the same pursuits, as they acquire a knowledge of all the new improvements of the day, and such information as cannot be otherwise obtained.

We wish it to be distinctly understood that the engravings which illustrate the columns of the SCIENTIFIC AMERICAN are executed *expressly for this paper*, and that whatever the reader finds, from week to week, illustrated therein, he can depend upon as being original, having never been printed in any other paper or magazine.

It costs but four cents a week to ensure the weekly visit of the SCIENTIFIC AMERICAN; for so small a sum, then, who can afford to be without it? We again urge upon our friends to procure new subscribers, and also send us the names of those most likely to take the SCIENTIFIC AMERICAN.

White partridges have appeared in considerable numbers, about Quebec, this winter. They are seldom found so far south, their habitat being in the cold polar regions. They are thickly feathered down to the talons, and are said to be very beautiful birds.

© 1859 SCIENTIFIC AMERICAN, INC.

An Interesting Relic.

In 1851, a Frenchman, Mons. J. Worms, received an American patent for a very ingenious improvement in printing presses, by which both sides of the sheet were printed in succession before issuing from the machine. A folding apparatus and other useful devices were also attached. Recently, in the course of certain examinations at the Patent Office in Washington, we came across the original drawings of M. Worms, and found attached thereto a fine specimen of the printing done by his improvement. It was a small folio sheet, printed in English, but with the quaint-faced type common to France. The subject matter of the impression is a dedication of the improvement to the memory of the immortal Franklin; and to us it presents a peculiar interest, as being a tribute of France to the memory of a brother inventor in America. We subjoin a copy of the specimen:—

HOMAGE TO FRANKLIN.

The inventor of the rotary press and cylindrical stereotype from which this little sheet is printed, feels it his duty to dedicate the first labor of the model destined for the Patent Office of the United States to the memory of Franklin:

To the memory of the printer, who, by the exercise of industry, frugality, and virtue, raised himself to that eminent position at which his influence over others was only equaled by their respect and admiration for him; to the memory of the man who, having faith in the triumph of truth, sought always to enlighten his countrymen; to the memory of him who established the first paper-mill in that great country to which those who suffer in Europe now look with hope; of him who there—by the newspapers which he published, by the ten thousand copies of his almanac which he annually circulated, by the corps of excellent printers which he formed—aided so much to build up that public spirit which carried America happily through the struggles of war, and the greater difficulties of a firm republican organization.

When the news of his death arrived in France, the Constituent Assembly was in the midst of its arduous labors. On the 11th of June, 1790, Mirabeau, the great orator of the Assembly—and on this occasion the eloquent interpreter of its grief—took the floor, and spoke as follows:—

"Franklin is dead! The genius which enfranchised America, and shed upon Europe floods of light, has returned to the bosom of its Maker. The sage whom both hemispheres reclaim, the man whom both science and history stand forward to honor, held, it cannot be denied, one of the highest of earthly ranks.

Long enough have European cabinets notified to each other the death of princes, great only in their funeral eulogies; long enough has the etiquette of courts proclaimed hypocritical mourning. Nations should weep only the loss of their benefactors; the representatives of nations should recommend to their homage only the heroes of humanity.

Congress has ordered, in the fourteen States of the Confederation, a general mourning of two months for the death of Franklin; and America at this moment is acquitting her debt of veneration for one of the fathers of her Constitution. Would it not be to our honor, gentlemen, to unite in this religious act—to participate in this homage rendered in the face of the universe to the philosopher who, more than any other, has contributed to secure throughout the earth the peaceful triumph of the rights of humanity? Antiquity would have raised altars to this vast and powerful genius, who, for the benefit of mankind, grasping by his mighty intellect not the earth alone, wrenched from the lightning its mysterious perils, and from the tyrant's hand struck down his sceptre.

France owes, at least, her testimony of grief for the loss of one of the greatest of men who ever served the cause of Science and of Liberty. I propose that the National Assembly go into mourning for the death of Benjamin Franklin."

This proposition, seconded by the Duke of La Rochefoucald, and supported by Lafayette, was unanimously adopted.

May this press serve to spread more widely those principles, devotion to which has made the name of Franklin immortal! May this press aid in the diffusion of Virtue, Science, Liberty, Truth! J. WORMS.

Paris, July, 1850.

Paris: printed by Firman Didot frères, Jacob street, 56, on the newly-invented rotary press.

Something Useful about Clay.

Of the various substance on the face of the earth few, if any, are so generally useful to man as clay. It is more than probable that the first substance which man began to fashion, to shape, or mold, was clay. The inspired writers repeatedly use the word clay in a figurative sense in reference to the shaping of the body. "Thou hast made me as the clay; your bodies are as the bodies of clay" (Job x., 9; xii., 12). Whether the clay was burned as bricks, or not, cannot be positively decided; but reference is directly made to "them that dwell in houses of clay" at that time. More than 1500 years B.C. "the potter's power over the clay" was perfectly familiar; so that by analogy we may fairly reason that the clay for houses may have been hardened by fire. As far as we can ascertain, pottery is one of the most ancient of arts. Man having obtained "power over the clay," he began to get power over the metals. This early adaptation of clay to domestic wants arose from the intrinsic merits of the clay itself. Its property to harden from mere exposure to the air and sun, was quite enough to render it serviceable; but when it was ascertained that fire turned it into a more durable material than stone, it gave of course great impetus to its workers. The potter's wheel or tool for fashioning clay is the same now that was used three thousand years ago. Clay is not only useful in pottery, but is applied in many of the arts, such as dyeing, where alum (a compound of clay) is extensively used for fixing colors, in preparing leather, and many other arts and manufactures. "But what *is* clay?" many will ask; and the laboratorian chemist replies "It is the rust of a beautiful metal." Not many years ago all the fashionable world of London flocked to Albermarle Street to see young Humphrey Davy produce metals from earth. Prior to this all earths, clays in particular, were considered primitive and unchangeable bodies; his genius, however, penetrated these mysteries, and the result was that we now know that all earthy bodies are but metallic rusts of one kind and another. Sir Humphrey Davy merely showed the world that the earthy bodies were of a metallic origin. M. Deville, of Paris, under the patronage of the present Emperor, has separated the metallic base of clay to such an extent that it is an article of commerce. Aluminium is now used for jewelry, especially bracelets, pins, and combs; in cabinet-making it is excellent for inlaid work; its lightness renders it extremely convenient for pencil-holders, thimbles, seals, small statues, medallions, vases and the like; for spectaclos also, as it does not blacken the skin like silver. But one of its most useful applications consists in using it for reflectors of gas lamps, since it resists the effects of sulphurous emanations, which silver and brass do not. The chemical name of clay is alumina, and the metal obtained from it aluminium. Most metals are characteristic of being very heavy; but aluminium is remarkably light; and though it has a silvery white metallic lustre, yet such is its lightness, that one can scarcely believe it to be a metal; but it assuredly is so. Beautiful spoons and forks are made with it, and at no distant period it will become as common as zinc, though of more value. If chemistry deserves well of us, it is in this case. It has now taught us that the very walls of our houses and the tiles of their roofs teem with a brilliant metal which we can turn to useful purposes. Some metals, such as iron, rust or become earthy very rapidly; but aluminium does not do so; yet it can be rusted, and the result is, that the earth *clay* is produced. All these facts prove that what was thought to testify figuratively the value of clay by the writers of the Scriptures is now known to be truth in its real and intrinsic sense. Thus every experiment in the laboratory tends to illustrate the sublime truth of every assertion in the Holy Volume. Within the outward earthy body of clay there is an effulgent metallic spirit.—*Septimus Piesse.*

Fuel for Locomotives.

The Philadelphia *Ledger* publishes some valuable statistics; now first made public by John C. Cresson, President of the Minehill and Skuylkill Haven Railroad, in regard to the use of anthracite coal on the locomotives of that road. Experiments have been made with this fuel on various classes of engines, and of 25 locomotives using it, two have run for ten years without a removal of their fire-boxes, and their boilers appear to be in good condition yet. In this time they have done an immense amount of duty. "The engines upon this road have nothing to distinguish them from wood-burners, except that the fire-box is larger in area and less in depth. The light trains vary from 100 to 140 cars, and the loaded trains from 100 to 250 cars. the ordinary work of a thirty-tun engine is a train of 140 cars taken from Skuylkill Haven to the summit of Broad Mountain, and returned loaded; the distance run in doing the work is about 65 miles, and the quantity of coal consumed is about four tuns. The total rise in the road is over 900 feet. Mr. Cresson further states that these results have been obtained by a few slight changes of construction in the boiler furnace, and proper care in the management of the fire. A large area of grate, wide wate space around the furnace of 3½ to 4 inches; a shallow fire-place and a large opening of exhaust nozzles so as to diminish the violence of the blast. To these have been added several auxiliary contrivances, one for varying the effect of the exhaust blast by having the smoke pipe to slide telescopically, under control of the fireman; another, for stirring the fire by a regular motion derived from the engine axle and thrown into action at will; a third to heae the feed-water and regulate its admission in such a way that it may be kept on at all times, in quantity adjustable to the wants of the engine."

Evaporation and Decomposition of Water.

MESSRS. EDITORS—There was a lecturer on science at this place lately, who asserted that a large portion of the vapor arising from the ocean was decomposed into its elements (oxygen and hydrogen), and that these were caused to unite again by electrical discharges, and come down as rain in thunderstorms. This theory was new to me; and I should like to know if scientific men believe in it.

P. C.

East Randolph, Vt., Feb., 1859.

[No such theory is entertained by scientific men. Not a particle of evidence has ever been produced to prove that hydrogen exists in a free state in the atmosphere, which it must do to fulfil the conditions of the above theory.—EDS.

Sewing Machine Patent Cases.

On the 15th ult., Judge Ingersoll, in the United States Circuit Court, this city, granted preliminary injunctions against fifteen sewing machine companies, to restrain them from infringing the patents of A. B. Wilson on the feed-motion. The defendants, we understand, were not prepared to go into the trial at present; they can move to have the injunctions removed at any subsequent period, and bring the cases to a full consideration of the court.

Notes and Queries

*** PERSONS who write to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

WE are unable to supply several numbers of this volume; therefore, when our subscribers order missing numbers and do not receive them promptly, they may reasonably conclude that we cannot supply them.

H. P. J., of Conn.—Wrought iron pipe of half an inch bore costs four times less than lead pipe of the same size; but it is not adapted for conveying water under-ground, as it soon rusts out.

P. W., of N. Y.—The prize essay upon canal navigation to which you refer is not to be found in this city, so far as we know.

R. S., of N. Y.—A paddle-wheel with self-regulating vertical buckets is not new, and therefore not patentable. Several wheels of this character have been patented.

J. J., of Maine.—The two models of your aquatic porcupine have arrived. They beat the whole tribe of stickle-backs, devil-fish, sea serpent, grumpus and walrus "all hollow." Yoked to a pair of overgrown turtles, they would make a splendid submarine voyage to Biddeford in the course of a couple of centuries.

G. A. B., of Dacotah Ter.—The specimen you sent us is galena, or sulphide of lead; it is a very good specimen, and valuable.

W. J. McC., of Tenn.—If your mill-picks are made of bad steel, you cannot make them work well by any tempering process. If the steel is good, dip them into molten lead until they are heated equally throughout, then plunge them suddenly into cold water.

P. J. C., of S. C.—If a newspaper is sent to your address and you take it out of the Post-office, you are responsible for the subscription. There is no get-away from this. Furthermore, so long as you owe the publisher for back subscription, he can continue to send the paper to you, and you will be obliged by law to pay for it. Our practice is, not to send the paper unless the subscription is paid in advance, and to discontinue it whenever the term runs out. This proves the most satisfactory rule.

YULE LOG.—A correspondent says he has observed this curious title applied to a recent book for children, and would like to know what it signifies. Yule is a name given to Christmas by the ancients; and on the night before Christmas, our English ancestors were wont to light up candles of an uncommon size, called "Christmas candles," and lay a log of wood upon the fire, called a "Yule log," or "Christmas block," to illuminate the house, and, as it were, to turn night into day. This custom, is, in some measure, still kept up in England to this day, and awakens many a joyous and happy thought of other days.

D. E. R., of Mich.—American patents are not granted for the application of old devices to new purposes, except as new combinations. If an inventor secures a patent for a certain device, it covers its application to all purposes.

W. G., of Vt.—If you have any collected experiments regarding the quantity of water which flows over high and low falls, we should like to see them. In calculating the power of waterfalls, no more allowance is made for water passing over a high than a low fall; the top of the water sheet, in both cases, is held to be zero. You did not state the cause of the locomotive boiler forcing out a blast of air. Were the feed pumps worked as air pumps?

W. H. J., of Mass.—To blue steel, first polish it bright, then heat it in a clear fire until it assumes a blue color, when it must be taken out, and plunged into a bath of cold water containing a little oil floating on the surface. This color is easily rubbed off. You may cover steel with a lac varnish, colored blue with ultramarine; or you may coat it with a blue enamel, consisting of ground glass, ultramarine, and borax, reduced to a paste, then laid on the steel, and fused in a fire; this is very permanent.

M. B, of Ky.—The best cement which you can apply externally to stop the leak of water in your pine cistern, is a mixture of white lead and fine ground sand or ground glass. It will be very difficult to stop leaks from the outside without caulking the cistern. You should endeavor to apply the above cement to the inside, where it will certainly stop the leak, and last for a hundred years.

Dr. W., of Pa.—We are aware that many eminent physicians have doubted the action of sarsaparilla, but Dr. Bocker was the first to prove it satisfactorily by a series of experiments. We do not consider it of any value as a remedial agent.

J. G. G., of Ark.—The draft of a chimney is increased by its hight, because the pressure at the top, when the air is once expelled, is much less than at the bottom. The number of square inches contained in a circle is found by multiplying half the circumference into half the diameter.

T. H., of N. Y.—A self-loading hay-wagon would be of great service to farmers; but unless it is made simple and moderately cheap, it never could come into general use. Farmers want tools capable of being repaired without the necessity of having a blacksmith attached to the farm.

W. M. B., of Pa.—A strong solution of pure isinglass is excellent for joining the ends of leather belts before they are riveted together. About 25 per cent of thick mastic varnish added increases its adhesiveness and ability to resist the action of moisture.

A B., of Texas.—How a bird can sail in the quiet air without moving its wings has puzzled more persons than you, and we have often been struck with the fact our-

© 1859 SCIENTIFIC AMERICAN, INC.

selves. We are, however, inclined to think that the impetus of the last flap of their wings is the cause, combined with a rapid but short motion of the tail.

J. C, of Dayton, O.—We have tried your specimen of coal oil with a clean lamp and wick; it burns with a clear and beautiful flame, but it has a strong carbonic odor. The color is just the thing required. The next specimen which you send, we hope, will have less of this objectionable smell. Some kerosenes surpass it for absence of odor, but not for any other quality.

W. A. G., of Va.—We are surprised that you could have had the least doubt of the meaning of the article on the expansive power of hot air, as being fifteen lbs. above atmospheric pressure when heated in a "close" vessel to 491° Fah., as mentioned. Construe it in any manner, it could mean nothing else. In reference to pressure in a steam boiler, it is always understood as being above that of the atmosphere.

R. M. S, of N. C.—Mr. Graham, of Appleton's Building, this city, will give you any phonographic information that you may require. The center of the earth is no doubt in a molten condition, and the matter it contains feeds the volcanoes, but it is not the grand source of electricity.

E. W., of N. Y.—India-rubber cement is made by dissolving the caoutchouc cut into fine shreds in turpentine kept warm in a close vessel for some days. Naphtha will also dissolve the gum and make it into a cement. Two sheets of india-rubber may be cemented together with it.

J. D., of Fla.—The specimens of ore which you have sent us are pyrites of no value, as they contain but a very small quantity of metal.

J. B, of R. I.—Very few painters are acquainted with the effects of different paints as applied to iron. A series of experiments were made several years ago in Europe by engineers to test the effects of different paints upon iron for ships, and red lead was stated to be the most durable when used with boiled oil.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, February 26, 1859:—

H. S. C., of Pa., $25; S. F. J., of Ind., $25; G. C. S., of Ga., $35; F. J. G., of N. C., $60; R. L. B., of Mich., $30; W. P. C., of ——, $25; J. C., of N. J., $25; E. I., of Conn., $50; J. D. B., of Vt., $30; W. H. & G. Y., of N. Y., $30; T. P., of N. Y., $30; E. D., of Ark., $15; A. C. L., of Pa., $30; M. B., of N. Y., $25; J. B., of N. J., $30; A. P. T., of Pa., $30; H. H. L., of Ill., $25; R. & S., of Ohio, $20; D. L. H., of Conn., $30; A. O. H. P. S., of Tenn., $30; J. M. W., of Pa., $30; H. & B., of N. J., $20; G. D. F., of Conn., $30; B. B. & Co., of Ill., $30; A. B., of N. Y., $100; G. B., of N. J., $25; W. M. M., of N. Y., $20. H. C., of Pa., $25; W. H. G., of N. H., $10; D. A. W., of N. Y., $30; H. A. G., of Ind., $30; J. F. H., of Ill., $30; A. E. P., of Ill., $30; W. H. R., of N. Y., $55; P. M., of N. Y., $30; A. W., of N. Y., $100; W. J. H., of Md., $250; W. A., of N. Y., $30; H. H. E., of Ill., $20; R. T. W., of N. Y., $25; T. & T., of N. Y., $25: W. L. W., of N. Y., $35; A. B., of N. Y., $110; J. R. C., of N. J., $80; C. S., of N. Y., $10.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, February 26, 1859:—

H. S. C., of Pa; F. P. C., of N. C.; J. C. S., of Mass., (two cases); S. F. J., of Ind., J. C., of N. J.; M. B., of N. Y.; M. H., of Conn.; E. B., of N. Y.; R. & S., of Ohio; H. H. L., of Ill.; R. T. W., of N. Y.; T. P., of N. Y.; T. & T., of N. Y.; H. C., of Pa.; W. L. W., of N. Y. (two cases); A. B., of N. Y. (two cases); W. B., of N. Y.

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office. 37 Park Row, New York. We established, over a year ago, a Branch Office in the City of Washington, on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly. CHAS. MASON.

Communications and remittances should be addressed to MUNN & COMPANY, No. 37 Park-row, New York.

TERMS OF ADVERTISING.

Twenty-five cents per line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

*** All advertisements must be paid for before inserting.

IMPROVED CIRCULAR SAW-MILL—Patented by Philander Eggleston, of Mobile, Ala., March, 1857. It is considered, by those who have seen it in operation, to be one of the greatest improvements of the age. The rapidity with which it turns out the lumber, with true and even surface, is truly astonishing. This mill has many advantages over the common Circular Saw Mill in use. It has its in construction two saws, one cutting on each side of the log at the same time; therefore it cuts two planks each time the log passes through between the saws. This mode of cutting plank from each side of the log at the same time, prevents the log from springing, and the saws from crowding or warping. The two saws are made simultaneously to approach or recede from each other any required distance by one movement of the hand. The whole arrangement is simple, easily kept in order, and requires no more hands to attend it than the single circular saw-mill now in use, and it cuts, at the same time, more than double the quantity of lumber.
Address, M. D. HARMAN,
1* Quitman, Miss.

DOLE'S PATENT SAW GUMMERS—Adapted to gumming all kinds of saws; a good article. Price $20; extra heavy machine, $25. A liberal discount to dealers. Orders solicited. Address DOLE & SILVER, Salem, Ohio. 26 2*

SAVE YOUR STEAM—OUR STEAM TRAP (illustrated in the SCIENTIFIC AMERICAN of July 24, 1858) for relieving steam pipes of condensed water and keeping back all the steam, is fast superseding everything used. We have more than five hundred of them in operation. It cannot freeze up, it keeps up the boiler pressure, maintains the full heat, and in many cases will save its cost in a few weeks' use. For the Traps or an illustrated circular, apply to HOARD & WIGGIN, Providence, R. I. 1*

MATHEMATICAL INSTRUMENTS—A complete assortment for engineers and machinists, in cases or separate pieces. Also school apparatus, as Globes, Magic Lanterns, &c. A priced and illustrated catalogue furnished gratis.
JAMES W. QUEEN & CO.,
26 3* No. 924 Chestnut st. Philadelphia, Pa.

PERIODICALS FOR 1859—THE BUILDER, A journal for the architect, engineer, operative, and artist (monthly); $6 per year. The Mechanics' Magazine, journal of engineering, agricultural machinery, manufactures, and ship-building; greatly enlarged to 4to size (monthly); $7 per year. The Practical Mechanic's Journal (monthly); $3 per year. The Civil Engineer and Architect's Journal (monthly); $7 per year. The Artizan, a monthly record of the progress of civil and mechanical engineering, &c.; $4 per year. The above are regularly imported and promptly supplied (subscriptions to be paid invariably in advance) by WILEY & HALSTED, 351 Broadway, New York.
☞ Five copies of either of the above works to one address will be charged as four. 1

FOR SALE—PATENT RIGHTS FOR THE following articles:—The best Scale for Detecting Spurious Coin; the best Cultivator Tooth; the best Rice-pounder; the best Churn and Butter-worker; the best Canteen, and several patentable inventions. Address J. DENNIS, JR., Washington, D. C., enclosing a stamp. 26

A GREAT CHANCE TO MAKE MONEY on a small investment.—The patent right for the United States for one of the best Corn-Husking Machines ever invented, at a very low price. Illustrated in No. 31, Vol. XIII, SCI. AM. For particulars address A. R. HURST, Chambersburg, Pa. 1*

J. F. B. FLAGG, RESIDING IN PHILADELphia in 1849, and who secured a patent for an arrangement for turning curves on railroads, will favor the advertiser by sending his address to Box 773. New York Post-office. 1*

THE PRACTICAL SURVEYOR'S GUIDE—Containing the necessary information to make any person of common capacity a finished land-surveyor, without the aid of a teacher. By Andrew Duncan, Land-Surveyor and Civil Engineer. With numerous illustrations. 12mo. Price 75 cents. Sent by mail free of postage.
HENRY CAREY BAIRD, Publisher,
25 3 Philadelphia, Pa.

A RARE OPPORTUNITY FOR MEN OF Enterprize—The county and State rights for that popular and highly useful invention, Johnson's Patent Sash Balance," can be had (upon early application) at the following very reduced rates:—For all counties, &c., containing (according to the census of 1850) less than 5,000 inhabitants, $5. For all containing over 5,000 and less than 10,000, $10. For all containing over 10,000 and less than 15,000, $15, &c. Send for a circular. Address ROSS JOHNSON, Frederick City, Md. 25 2*

FOR SALE OR TO LET ON REASONABLE Terms—A Car Wheel Foundry, with a complete set of modern fixtures, including patterns, suitable for making fifty wheels per day. Located in Newburgh, N. Y. Apply to J. STANTON & CO., Newburgh, N. Y. 25 4*

HARRISON'S GRIST MILLS—20, 30, 36 AND 48 inches diameter, at $100, $200, $300 and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also, Bolters, Elevators, Belting, &c., &c. Apply to S. C. HILLS, 12 Platt st., New York.
1 e3w

COBURN'S EXTRA OIL—FOR MACHINERY and Burning; warranted first-rate (never gums, will burn in night lamps, &c.) has given satisfaction for ten years during which we have sold it.
JOHN W. QUINCY & CO.,
16 13e5w* No. 93 Williamst., New York.

INSTRUMENTS—CATALOGUE CONTAINING 250 illustrations of Mathematical, Optical and Philosophical Instruments, with attachment of a large sheet representing the Swiss instruments in their actual size and shape, will be delivered, on application, to all parts of the United States, by sending 12 cents in postage stamps. C. T. AMSLER.
22 7eow* No. 635 Chestnut st., Philadelphia.

STEAM WHISTLES—ALL SIZES OF THE most improved patterns constantly on hand. Brass Lift and Force Pumps, (single and double-acting) Ship Pumps, &c., a full assortment. Manufactured by HAYDEN, SANDERS & CO.,
16 13 eow* 306 Pearl st., New York.

GREAT CURIOSITY—PARTICULARS FREE. Agents wanted. SHAW & CLARK,
24 4* Biddeford, Me.

GROVER & BAKER'S CELEBRATED Family Sewing Machines—495 Broadway, New York; 18 Summer st., Boston; 730 Chestnut st., Philadelphia; 137 Baltimore st., Baltimore; 58 West Fourth st., Cincinnati. A new style—price $50. This machine sews from two spools, as purchased from the store, requiring no re-winding of thread. It hems, fells, gathers and stitches in a superior style, finishing each seam by its own operation, without recourse to the hand-needle, as is required by other machines. It will do better and cheaper sewing than a seamstress can, even if she works for one cent an hour. ☞ Send for a circular.
19 13

WROUGHT IRON PIPE FROM ⅛ OF AN inch to six inches bore; Galvanized Iron Pipe (a substitute for lead), Steam Whistles, Stop Valves and Cocks, and a great variety of fittings and fixtures for steam, gas, and water, sold at wholesale and retail. Store and Manufactory 76 John, and 29, 31 and 33 Platt st., New York. JAMES O. MORSE & CO.
18 13

WATER WHEELS—BALDWIN'S "UNIVERSAL TURBINE" gives better satisfaction than any other water wheel, the overshot not excepted. It gives a higher percentage, with a partially raised gate, than any other. It gives from 75 to 97 per cent, according to the size of wheel and head applied. When you purchase a water wheel, my friends, get the best, if you would save money, as the best is always cheapest in the end, and you will have to make no changes. For further information address, S. K. BALDWIN,
Laconia, N. H.
"We have examined a model and drawings of the 'Universal Turbine,' and believe it to be a scientific water wheel, and one calculated to give the greatest amount of power from a limited quantity of water."
—Munn & Co. 18 13*

SECOND-HAND MACHINERY AT VERY low prices for cash.—Steam Engines, Slide Lathes, Planing Machines, Drills, Slotting Machines, &c.; also a variety of Mortising, Tenoning, and Sash Machines, &c., all warranted in good running order. Address CHARLES G. WILLCOX, 135 North Third st., Philadelphia, Pa. 23 6*

BUTCHER'S IMPERIAL CAST STEEL FILES—The subscribers keep constantly on hand a very large assortment of the above celebrated files, which are acknowledged to be unequaled in quality, and to which the attention of railroad companies, engineers, and machinists is invited.
BARTON & SCOTT,
25 26 No. 18 Cliff st., New York.

CLAY RETORTS—THOS. HOADLEY, PATentee of the Patent Pyro-clay Gas Retorts—manufactory Nos. 32 and 34 Front st., Cleveland, O. 24 12*

CROSSETT'S PATENT STAVE CUTTER—Patented July 1, 1844; re-issued March 2, 1858; renewed and extended June 26, 1858. The above-mentioned machine is warranted to cut more and better staves than any other machine in the United States, and is the most simple, cheap, and durable. I hereby caution all persons against using and vending said machine (the main features of which consist in the stationary knife and vibratory bed-piece) without the legal right to do so. Offenders will be dealt with according to law. All persons wishing an interest in the extended term of said patent can obtain it by addressing the undersigned at Joliet, Ill.
21 7* GEO. I. CROSSETT, Assignee.

WOODWORKING MACHINERY—WOODworth's Daniels' and Gray & Woods' planing machines. Sash molding, tenoning and mortising machines. Scroll saws, arbors, &c., made of good materials, and by experienced workmen, at Worcester, Mass., by BALL & WILLIAMS. 22 10*

STEAM ENGINES, SLIDE LATHES, Planing Machines, Drills, &c.—Orders taken for all descriptions of machines for working in wood or iron. Address CHARLES H. SMITH, Machinery Depot, No. 135 North Third st., Philadelphia. 23 6*

PHOTOGRAPHING ON WOOD—GREAT Improvement in Wood-cut Illustrations. The subscribers are prepared to execute Wood Engravings at the shortest notice, with accuracy, and much less expense than by the old tedious method of hand-drawing. They photograph (by Price's patent process) the object or picture directly on the block of wood from which to be engraved, thus insuring a perfect representation, and at much less expense.
WATERS & TILTON,
Photographers and Engravers,
23 5* No. 90 Fulton st., New York.

CALIFORNIA AGENCY FOR PATENTS—WETHERED & TIFFANY, San Francisco, will attend to the sale of patent rights for the Pacific coast. References:—Messrs. Tiffany & Co., New York; Wethered, Brothers, Baltimore; George W. Ponds & Co., Boston. 23 13*

SCREW BOLTS—WITH SQUARE, ROUND, or Countersunk Heads, Bolt-ends, Turn Buckles, Square-head Wood Screws, Tap Bolts, Machine Screws, Ratchet and Breast Drills, Carriage Bolts, Nuts, Washers, &c., for sale by CHARLES MERRILL & SONS, No. 556 Grand st., New York. 24 5*

HYDRAULIC JACKS OF 15, 20, AND 25 Tuns power—Prices, $100, $115 and $130 each. Hydraulic Presses of 15 tuns power, price $150. For sale by JAMES O. MORSE & CO., 76 John and 29, 31 and 33 Platt sts., New York. 25 3mos

SECOND-HAND STEAM ENGINE AND Boilers, 100-horse power, in good order, for sale—separate or together—for less than half their value, to close a concern. For particulars, address N. JOHNSON, 490 Hudson st., New York. 25 2*

LARD OIL MANUFACTURERS—MESSRS. WM. SKENE & CO. manufacture purified Lard Oil of the best quality, for machinery or burning, in Bullett st., four doors below Main, Louisville, Ky. 25tf

"They are without a rival."—Scientific American.

WHEELER & WILSON'S SEWING MACHINES—Price greatly reduced. Send for a circular. Office, No. 545 Broadway, New York. 22 tf

WOODWORTH PLANING MACHINES—Sash, Tenoning and Mortising Machines, Steam Engines, Slide Lathes, Drills, &c., at greatly reduced prices. Address CHARLES H. SMITH, 135 North Third st., Philadelphia. 23 6*

CROZIER'S PATENT BARREL MACHINERY—Five hundred barrels can be made in a day by one set of machines. For machines or rights for State or county, apply to the agents, SLIPPER & GOADBY, No. 2 Broadway, New York. 24 4*

DRAINING TILE MACHINES OF THE most approved construction, manufactured by R. R. GIFFORD, Albany, N. Y. 23 12*

CORLISS' PATENT STEAM ENGINES—On application, pamphlets will be sent by mail containing statements from responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. (The "James' Steam Mills," Newburyport, Mass., paid $19,734 22, as the amount saved in fuel during five years. The cash price for the new engine and boilers was but $10,500.) These engines give a perfectly uniform motion under all possible variations of resistance. Two hundred and fifty, varying from about 20 to 500-horse power, are now in operation. Boilers, shafting, and gearing.
CORLISS STEAM ENGINE CO.,
15 26* Providence, R. I.

HOWE'S WEIGHING SCALES—STRONG & ROSS' PATENT. Having received first-class premiums from the Vermont State Fair, New York State Fair, Virginia State Central Fair, United States Fair, Virginia State Fair, and Franklin Institute Fair, within sixty days, we have now only to invite the public to examine our large stock of scales of every variety, and also to test the principle of a six-ton scale, set up on the floor of our store, as well as to examine certificates of their superiority from many of our leading houses. FRANK E. HOWE,
No. 438 Broome st., first door from Broadway, New York.
13 13* JOHN HOWE, JR., Brandon, Vt.

BOILER FLUES FROM 1 ¼ INCH TO SEVEN inches outside diameter, cut to any length desired, promptly furnished by JAMES O. MORSE & CO., 76 John st., New York. 18 13

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 14 13

STEAM ENGINES, STEAM BOILERS, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y. 1 26

HARRISON'S 20 AND 30 INCH GRAIN Mills constantly on hand. Address New Haven Manufacturing Co., New Haven, Conn. 14 13

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 309 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer. Nos. 37 and 38 Park Row, New York. 14 13

HOYT BROTHERS, MANUFACTURERS OF patent-stretched, patent-riveted, patent-jointed, Oak-Leather Belting; Store, 28 and 30 Spruce street. Manufactory, 210, 212, 214 and 216 Eldridge st., New York. A "Treatise on Machinery Belting" is furnished on application, by mail or otherwise—gratis.
16 12*

PAGE'S PERPETUAL LIME KILN—PATented 1854, 1857, and 1859—will burn 100 barrels of lime every 24 hours, with three cords of wood, or 1½ tuns of coal, not mixed with lime rock. Will burn every variety of lime rock, marl, or shells. Rights for sale. C. D. PAGE,
21 8* Rochester, N. Y.

CARY'S CELEBRATED DIRECT ACTING Self-Adjusting Rotary Force Pump, unequalled in the world for the purpose of raising and forcing water, or any other fluid. Manufactured and sold by CARY & BRAINARD, Brockport, N. Y.
Also for sale by J. C. CARY, 240 Broadway, New York City. 12 tf

HOLLY'S PATENT ROTARY PUMP and Rotary Engine has no valves or packing, and is the most simple, durable, and effective Force Pump in use, as numerous certificates in our possession will prove. Also manufacturers of the celebrated Rotary Steam Fire Engines, with which we challenge the world, as to portability, time of getting at work, low pressure of steam used, quantity of water discharged, and distance forced. There are now four of these machines in use in the city of Chicago, and one in the city of Boston, Mass. Third class engine weighs about 7,000 pounds, and forces a 1¼-inch stream 200 feet, or two 1-inch streams 180 feet, or one 1¼-inch stream 240 feet, with a steam pressure of from 40 to 60 pounds. Generates a working pressure of steam in from 4 to 6 minutes from cold water. Descriptive catalogues of pumps, engines, &c., sent to all applicants.
SILSBY, MYNDERSE & CO.,
23 13 "Island Works," Seneca Falls, N. Y.

FELT FOR STEAM BOILERS, PIPES, Ship-sheathing, and all varieties of felting manufactured to order by JOHN H. BACON, Winchester, Mass. 14 13*

IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 14 13

WOODWORTH PLANERS—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York. 1 26

A MESSIEURS LES INVENTEURS—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui preferaient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.
MUNN & CO. Scientific American Office, 37 Park Row, New York.

Zur Beachtung für Erfinder.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an
Munn & Co.,
37 Park Row, New-York.
Auf der Office wird deutsch gesprochen.

© 1859 SCIENTIFIC AMERICAN, INC.

Science and Art.

New Patent Lock.

The inventor of this lock—O. B. Thompson, of Hudson, Ohio—has endeavored to produce (and has succeeded in so doing) a simple lock, that will be burglar-proof, and capable of permutation.

In our engravings, Fig. 1 is a view of the lock with the front removed, and Fig. 2 is a view of the back of the bolt detached. Fig. 3 is the key, which folds (as seen) into a little box. Fig. 4 is part of the case of the lock, carrying a small pin, *e*, the use of which we shall shortly describe. Fig. 5 is a detached view of a tumbler.

A is the case, which is of the usual form, constructed of any metal now used for such a purpose. B is the bolt, fitted in the case, A, so that it may slide freely in it in the usual way. To the back side of the bolt, B (Fig. 2), a tumbler, C, is attached by a pivot, Q, this tumbler having a small plate, *b*, extending to the inner end of the bolt. The tumbler has three slots, *c d d*, made through it. *e* (Fig. 4) is a pin, which is attached permanently to the case, A, and prevents the casual movement of the bolt when locked or unlocked, by fitting into one of the slots, *d d*. Within the case, A, a recess, D, is formed, which contains a series of tumblers, *f*, and guards, *g*, that work on a shaft, *h*. The tumblers, below their axis, *h*, are curved toward the front of the lock, *h'*, and slotted downwards at the other end, as seen at *f'*. The The guards, *g*, are similar in shape to the tumblers, *f*, and are formed of metal plate doubled or bent so as to form a sheath to receive the tumblers, which are fitted snugly in the sheaths, but still a lowed to move therein. The shaft, *h*, being the common axis for both. To the outer edge of each guard a small bar is attached, the lower ends of which project a trifle below the guards, and the upper ends of the guards project a little above the slotted ends of the tumblers. The slots, *f'*, are made in the tumblers at varying distances apart.

Below the tumbler box, D, there is a chamber, E, in which a series of sliders, *j*, are placed, which work in proper grooves, and have a vertical projection at their inner ends, that tends upward into the lower part of the tumbler box, D. At the back part of the chamber, E, there is placed a short metal plate, and behind it a piece of leather, or other suitable yielding or elastic substance, to serve as a buffer, is placed. Against the outer edge of each guard, *g*, a spring bears, which has a tendency to keep the lower ends of the bars of the guards against the projections of the sliders, *j*. The outer ends of these slides are exposed at the front side of the case, and a key, F (Fig. 3), which is formed by having a series of bits, *p*, screwed into a plate, *q*, the bits, *p*, being of varying lengths, corresponding to the varying positions of the slots, *f'*, in the tumblers. The plate, *q*, may be hinged to a case or box, *r*, so that the bits may be enclosed therein for convenience of carrying it.

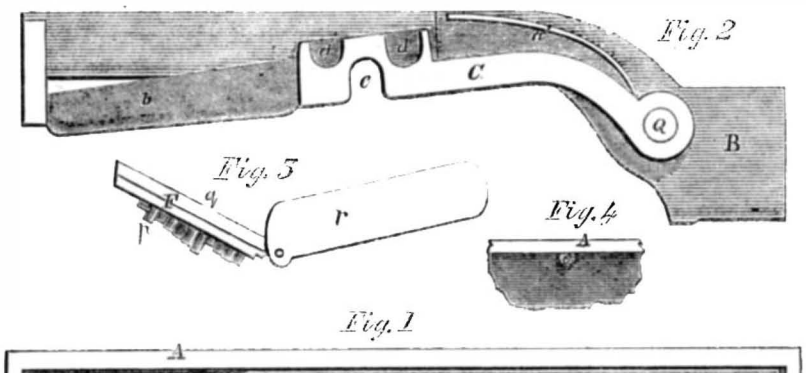
G represents the knob arbor, which passes into the case, A, and has a bit, T, attached to its inner end, and also an eccentric boss, S, the form of which is clearly shown in Fig. 1. H is a bar, one end of which is secured by a pivot, *n*, in the case, A. This bar, when not otherwise acted upon, presses against a ledge or strip in the tumbler box, D. The bolt tumbler, C, has a spring, *a*, bearing upon its upper surface, as shown clearly in Fig. 2.

From the above description of parts it will be seen that when the pin, *e*, is in the back or inner slot, *d*, of the bolt tumbler, C, the bolt, B, cannot be thrown back; and it will also be seen that when the plate, *b*, rests on the tops of the tumblers, the bolt tumbler will be retained in such position as to cause the pin, *e*, to be in said slot. In order, therefore, to unlock the lock, the plate, *b*, must be allowed to fall, so that the pin, *e*, may be out of slot, *d*. This is effected as follows:—The knob, G, is so turned that the eccentric boss, S, will throw up the bolt tumbler and plate, *b*, the latter being, by this means, moved above the upper ends of the guards, *g*, and allowing the same to be shoved towards the front part of the case. When the plate, *b*, is raised, the bits, *p*, of the key are pressed against the outer ends of the slides, *j*, and the latter pressed inwards, so that their projections will actuate the guards, *a*, and the latter by friction move the tumblers, *f*, against a plate; and as the bits, *p*, of the key are made of varying lengths, corresponding to the varying positions of the slots, *f'*, it follows, as a matter of course, that the guards, *g*, will be pressed or forced over the tumblers, *f*, a distance corresponding to the lengths of the bits, *p*, that actuate them, and by withdrawing the key, the springs will force back the guards, the guards carrying the tumblers, *f*, with them, and bringing the slots, *f'*, in line. so that the plate, *b*, may descend therein, and bring a pin upon T into slot, *c*, of the tumbler, C. By turning the knob, G, therefore, after the key, F, is withdrawn, the bit, T, of the knob arbor will enter the recess, *c*, of the tumbler bolt, and throw back the bolt. When the bolt is shoved forward again and the lock locked, the bit, T, depresses the bar, H, which acts against the parts, *h'*, of the tumblers, and throws them into their former positions, so that the slots, *f'*, will be out of line with each other, the eccentric boss. S, previously raising the plate, *b*.

The changes or permutations may be made at any time by removing the front plate, and placing the tumblers and guards differently on the shaft, *h*, the bits, *p*, of the key, F, being correspondently changed. The bits, *p*, and tumblers are numbered so as to always secure a correct adjustment. In case either of the slides, *j*, become fixed or wedged tightly, in consequence of burglars tampering with them, the slide may be driven inward so as to loosen the slides, the plate at their back and buffer preventing the slides from being injured by the pounding. By this invention the tumblers, *f*, cannot be operated upon as usual, and there is no positive connection between the slides, *j*, and the tumblers, *f*, and consequently there cannot be any certain operation, in a pickable point of view.

It was patented November 2, 1858, and the inventor, a student at Western Reserve College, having no opportunity to introduce the invention himself, will be happy to furnish any particulars upon being addressed as above.

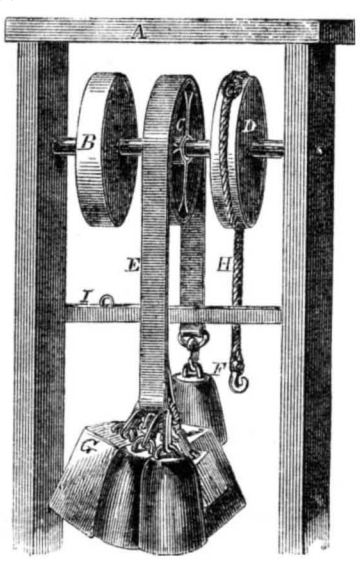
THOMPSON'S LOCK.



Experiments with Belting.

It has long been a question of great interest to all who use belting to drive machinery, whether leather or vulcanized rubber hugged the pulley the best, and hence was less liable to slip. The manufacturers of both articles have been in the habit of talking "considerable high" on this subject, each, of course, making it as "clear as mud" to the intelligent listener, that their own particular manufacture was an illimitable number per cent better than any one else's.

To satisfactorily decide this point, J. H. Cheever, Treasurer of the New York Belting and Packing Co., Park Building, this city, made a series of experiments, which we had the pleasure to witness, by the aid of the simple device that we have illustrated. It consists of three pulleys mounted on an axle or shaft in a frame, A. Pulley B was covered with rubber, C was a polished iron pulley, such as is ordinarily used in machine shops, and D was covered with leather. In the first experiment, a leather belt of good quality, three inches in diameter and seven feet long, was placed over the pulley, with 32 pounds suspended from each end. Weights were then added at one side until it began to slip over the pulley, and the results were as follows:—



Leather belt on iron pulley slipped at 48 lbs.
" " leather " " " 64 lbs.
" " rubber " " 128 lbs.

This arrangement is shown by E F G. The next experiment was with vulcanized rubber. A three-ply belt of the same diameter, length, and thickness as the leather one, was chosen, and being loaded with 32 pounds to keep it "taut," weights were added, as in the former instance, and the result was as follows:—

Rubber belt on iron pulley slipped at 90 lbs.
" " " leather " " 128 lbs.
" " " rubber " " 183 lbs.

The pulleys were held fast by having the axle or shaft clamped to the frame. The experiment was then tried in another way. One end of the belt was secured to a staple, I, in a cross-piece, and the other being thrown over the pulley, B, was weighted with 32 pounds. A rope was passed round the pulley, D, and secured to it, and the free end of the rope weighted. The results were the same; and it took nearly the same weight to rotate the pulleys under the belt as it did to slip the belt over the pulley.

As any one who has occasion to use belting can make these comparative experiments for themselves, it is needless for us to make any comments on them.

EXCITING HEAT.—The facilities which nature has placed within our reach, for the purpose of exciting heat, are worthy of notice. By concentration of the sun's rays any combustible material may be inflamed, even the brilliant can thus be burned. By the compression of air in a small cylinder of glass or metal, we may ignite a piece of phosphorus. By pouring concentrated nitric acid on oil of turpentine, by directing a small stream of hydrogen on small particles of spongy platina, by the flint and steel which our forefathers of many generations have used, &c., we may encite a flame. The products of the vegetable world, both in a fossil and recent state, are destined for the important purpose of maintaining heat.

MECHANICS

INVENTORS, MILLWRIGHTS, FARMERS AND MANUFACTURERS.

FOURTEENTH YEAR

PROSPECTUS OF THE

SCIENTIFIC AMERICAN.

This valuable and widely circulated journal entered upon its FOURTEENTH YEAR on the 11th of September.

It is an Illustrated Periodical, devoted to the promulgation of information relating to the various MECHANICAL and CHEMICAL ARTS, MANUFACTURES, AGRICULTURE, PATENTS, INVENTIONS, ENGINEERING, MILL WORK, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

All the most valuable patented discoveries are delineated and described in its issues, so that, as respects inventions, it may be justly regarded as an *Illustrated Repertory*, where the inventor may learn what has been done before him in the same field which he is exploring, and where he may publish to the world a knowledge of his own achievements.

Reports of American Patents granted are also published every week, including *official* copies of all the PATENT CLAIMS. These Patent Claims are furnished from the Patent Office Records expressly for this paper, and published in the SCIENTIFIC AMERICAN *in advance of all other publications.*

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate.

TERMS OF SUBSCRIPTION—Two Dollars a Year, or One Dollar for Six Months.

CLUB RATES.

Five Copies, for Six Months.....$4
Ten Copies, for Six Months.....$8
Ten Copies, for Twelve Months.....$15
Fifteen Copies, for Twelve Months.....$22
Twenty Copies, for Twelve Months.....$28

Southern, Western and Canadian money or Post office stamps, taken at par for subscriptions. Canadian subscribers will please to remit twenty-six cents extra on each year's subscription, to pre-pay postage.

For all clubs of Twenty and over, the yearly subscription is only $1 40. Names can be sent in at different times and from different Post Offices. Specimen copies will be sent gratis to any part of the country.

MUNN & CO., Publishers and Patent Agents,
No. 37 Park-row, New York.

© 1859 SCIENTIFIC AMERICAN, INC.